TRANSACTIONS

OF THE

TWENTY-SECOND ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF WASHINGTON, D. C.
MAY 1, 2, AND 3, 1900

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THE PRESIDENT'S ADDRESS.

BY SAMUEL JOHNSTON, M. D.,

FELLOWS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION: Through your suffrage I am permitted to be the recipient of the highest compliment that it is your privilege to bestow annually upon one of our members, and I beg to express to you my most sincere thanks for the high honor you have conferred upon me in choosing me your president. My pleasure, though, in taking the chair is dampened somewhat by the sense of responsibility which I am keenly conscious is no small part of the office; and inexperience in parliamentary rulings prompts me to trust to your generosity and to crave your indulgence for my shortcomings. A cordial greeting awaits you, as always, at the capital of the nation, and I beg to extend to every one of you and our guests a most hearty welcome. May I not hope that this meeting, the last that we shall have in the Nineteenth Century, will be a memorable one in our annals?

The twenty-first annual meeting, held in the city of Chicago, in May last, was a most harmonious one, the fellows present numbered about thirty, and both the

papers presented and the discussions following were of high order. The social feature of the meeting will long be remembered with pleasure and gratitude for the princely hospitality bestowed upon us. Noteworthy among the papers on the programme, was one by Dr. G. Hudson Makuen, upon stammering, with the exhibition of a patient cured by his method of direct nervomuscular training. An interesting discussion on the relation of pathological conditions in the ethmoid region of the nose and asthma brought out many instructive points and added much to our knowledge relating to the pathology and treatment of this most intractable disease. Other subjects equally instructive might be referred to, but time will not permit.

It is no easy matter to choose a subject for an address to present to this assembly of experts in laryngology. Even an attempt to review the salient points in the literature of our specialty for the past year would be an herculean task, and I should doubtless only repeat to you what you already know. It occurs to me, therefore, that it may not be inopportune to lay before you a few simple suggestions which have occurred to me regarding the future harmony and mutual good-fellowship of our association. Not to detain you by a long discourse, permit me to state in as few words as possible some regulations which, in my judgment, should guide us in our future policy. The membership should be limited to a number to be decided by a two-thirds vote of the society; old members should be encouraged to continue to be active workers and a feeling of good fellowship stimulated.

Mature judgment and skill in diagnosis and operative work, I need scarcely remind you, come only by years of experience. Scientific and clinical laryngology should go hand in hand as in other departments of medicine and surgery. It is said, and with truth, that in order to practise successfully any specialty, one must be a clinician in every sense of the word, so intimately do all the various parts of the human body depend one upon the other. In the study of our cases, the body should be examined as a whole, including the blood and the secre-

tions. For example, a leucocytosis of considerable extent is apt to arise in malignant diseases, and its discovery may help us in diagnosticating cancer of the larynx in suspicious cases.

It seems to me that in teaching classes in laryngology, in these days when surgery is such a lever in our successful treatment, enough importance has not been given to details in operating upon the nose and throat. The student should be taught upon the cadaver all the operations upon these regions as well as those upon the ear, and required to perform them repeatedly, as in the usual courses in operative surgery. Skill in operating cannot be acquired by simply looking on at our throat and nose clinics.

The profession at large, and the younger members especially, look to us to teach what methods are the best in the treatment of diseases of the upper organs of respiration, and any opinions which are allowed to go to the press with our sanction, not founded upon mature study and clinical experience, will only do harm to untold thousands of individuals.

We should not be hasty in passing new applicants into our ranks, but rather encourage our present number of fellows to renewed efforts. Dr. Mackenzie, in his eloquent presidential address before you in 1889, offers the suggestion that "our doors should be open to all, but at no time and under no circumstances should we be guided in the selection of our members by personal, political, or geographical reasons," and I wish to indorse his words with emphasis. It is not numerical strength, but individual attainments in all that pertains to medicine, that is needed to perpetuate the high standard and influence that this association holds in the eyes of the world.

It is desirable, of course, to have a number of papers on the annual programme, but it appears to me that it would be preferable to have a few papers and to have those thoroughly discussed, rather than a long list with, in some instances, the discussion cut short for lack of time and other papers not discussed at all.

The papers should be divided into two classes,

scientific and clinical, and in the latter, where a necropsy has been possible, a full report of the findings in the dead-house and in the pathological laboratory should accompany the report.

Owing to the tendency of some writers to advance views which have not withstood the test of clinical application, I would make it a law of this society that no opinions should be allowed to be given to the world, indorsed by this association, which are not founded upon facts, so far as they are possible.

In the treatment of throat and nose diseases I would plead for the application of mild measures; and in particular, for the judicious handling of the galvanocautery, the nasal saw, and Gottstein's curette. Many diseases, I feel confident, could be prevented by careful hygiene of the buccal, the pharyngeal, and especially the nasal cavities.

> "The evil that men do lives after them;
> The good is oft interred with their bones."

Article IX, Section I of the by-laws reads as follows: "Any fellow who shall have failed to furnish a paper for three successive meetings, or who shall have absented himself for three successive meetings, may, on vote of the council, be dropped from the association." It was recommended that this by-law should be amended by excluding fellows of twenty years' standing and creating a list of retired fellows. I beg to question the advisability of any such legislation, and I could not be more strongly supported in my doubts regarding the older members than by the following quotation from the *Autobiography of Samuel D. Gross:* In response to a toast, "Our Guest," at a dinner given to the late Professor Gross, in Philadelphia, in 1879, Dr. Agnew said in part: "It is, I fear, too commonly thought, in these days of mad haste for preferment, place, or power, that men when they have passed three score and ten years, should gracefully retire to the shades of private and inactive life, leaving the field to younger athletes. This is a great mistake. Look at old Plato, at eighty-one, delving away at his studies with all the enthusiasm of youth; at Isocrates,

delivering his great Panathenaic oration at ninety-two. No! No! There is something in the grace and dignity of age. Its serene complacency of mind, when coupled with an affluent wealth of knowledge and rich stores of observation and experience, renders the presence of old men in our midst pillars of strength."

In regard to the compulsory act of no papers or attendance for three successive years, no membership—I would erase this clause from our by-laws, for I believe each fellow will conscientiously do his duty in all faithfulness and honor to this society without any urging in the shape of such a by-law; nor do I think that this law contributes in any way to increase the influence or dignity of our association.

It may not be premature, I hope, and I will ask for your consideration, that we follow the advance of the magistrates of ancient Rome, who in the latter half of the fifth century B. C. established the censor. The censorate should be composed of two fellows appointed by the president, whose duty it shall be to pass upon all papers and discussions before publication in the *Transactions*. The members composing this body shall be chosen annually, and be eligible for reappointment.

"Maybe wildest dreams
Are but the needful preludes of the truth "

I beg to remind you that the conception of the need of a national laryngological association originated with Dr. Frank H. Davis, of Chicago, twenty-three years ago, and that it is due to the ardent zeal and untiring labor of the favored few who responded to that first call at Buffalo, in June, 1878, together with the subsequent judicious additions to our ranks, that this association has become a great success, as evidenced by a review of the twenty-one volumes of our *Transactions* and a glance at the programme before you. I am sure I am not wrong in saying, and it must be evident to you, that year by year, as we assemble at our meetings, new life and energy are shown in our proceedings, and new regions are being explored.

Dr. Da Costa, in his valedictory address at the Jef-

ferson Medical College, in April, 1891, says: "Day by day, step by step, discoveries are being approached which are already casting their shadows across our path. They will be reached one by one. It is well that this should be so. If everywhere were light at once, we should be limited in our knowledge."

Within the recollection of many of us, the nose and accessory sinuses (with the exception of the antrum of Highmore) were scarcely considered, and nasal pathology was a mere cipher. Little or no attention was given to nasal affections beyond the removal of tumors and the use of Thudichum's nasal douche in the treatment of a rhinitis or an ozæna. When we look around us now, "by the trimmed lamp of knowledge," we behold great light where before darkness reigned.

In surgical technics our fellows are unsurpassed. The ingenuity of the Anglo-Saxon is always in advance, in medicine equally as in all industries. As the artist speaks through ornaments, we must speak through our works—"Whose heart has not kindled with enthusiasm before the arch which tells of the nation's triumph, or the column to commemorate the glory of the victor? They speak a language which shall never die."

Let it, therefore, gentlemen, be our endeavor, by industry and scientific attainments in our specialty, to make our contributions worthy of our great national association and so receive the lasting gratitude of all mankind.

It becomes my very sad duty to announce the death of Dr. Max Thorner, of Cincinnati, Ohio, on Sunday, August 27, 1899. Although just admitted to membership and personally not known to some of us, yet, by the great merit of his contributions to the literature of laryngology, he was no stranger to our fellows. Dr. Thorner gave promise of becoming one of our most zealous members, and by his demise this association has lost one who was destined to hold a conspicuous place in our midst.

I regret to chronicle, also, the death of Dr. Joseph C. Mulhall, who expired on Thursday, January 11th, at his home in St. Louis, aged forty-nine. Since 1886, when

Dr. Mulhall became a fellow of the American Laryngological Association, he has held an enviable position among the laryngologists of the United States. His work was always thorough, and we shall miss, in our deliberations, the wisdom of his teaching as well as his personality.

One of our corresponding fellows, Professor Carl Störk, died at Heitzing, near Vienna, Austria, September 17, 1899, in his sixty-seventh year. In the death of Professor Störk, not only this association, but the profession at large, has lost a distinguished teacher and friend, and we beg to mingle our most sincere expressions of sorrow with those of the multitude who mourn for him in this country and in his own native land.

To this list of renowned dead, whose loss we sincerely deplore, I have to add that of William McNeill Whistler, M. D., senior physician, London Throat Hospital, and one of our corresponding fellows. The memory of this eminent physician and laryngologist will ever linger in the hearts of his friends and associates, and also of all who knew him by his works.

I will not longer trespass upon your valuable time, but proceed to the work before us. I now declare the twenty-second congress of the American Laryngological Association open and ready for the intellectual feast, in the shape of the highly scientific programme, which has been prepared for us.

Paper.

LARYNGITIS A PROVOKING CAUSE OF THE ASTHMATIC PAROXYSMS.

By WILLIAM C. GLASGOW, M. D.,

It may seem like threshing over old straw to bring before you again the subject of reflex neurosis of the upper air passages; still, repetition is at times a good thing, inasmuch as it tends to fix the attention, and observations are remembered which would otherwise be forgotten.

Since the time of Voltalini nasal reflexes have largely occupied the attention of laryngologists, and a great deal of matter has been contributed to the subject by some of our own fellows. Among the other reflexes, asthma has been given a prominent place, and in the greater number of articles published in our *Transactions* we find it ascribed solely to some nasal irritation.

At the meeting of our association in Boston, in 1882, I read a paper, or rather a paper was read for me, in my absence, by Dr. Seiler, with the title Laryngeal Asthma. In that paper I maintained that the asthmatic paroxysm was at times provoked by a laryngeal irritation, and that it could be relieved by local applications to the larynx. At the time this paper was written I thought the idea an original one, but since then I have found a monograph by Horace Green, in which he professed to break the asthmatic paroxysm by the application of nitrate of silver to the larynx. This paper is simply a repetition of the views expressed eighteen years ago, and the experience of these years has not changed them. Since that paper was written, we have had expressions from a few members of our society which show that they consider that the irritation may be in different parts of the respiratory tract, although in most cases these are considered to be secondary to some pathological condition of the nasal chambers or the nasal pharynx.

It is now generally admitted that asthma is a vasomotor neurosis and that the paroxysm is provoked by some peripheral irritation of the sympathetic nerve. Experience has shown that in the greater number of cases this irritation lies in the upper portion of the respiratory tract. The posterior surface of the turbinates, the interarytænoidal commissure, the posterior surface of the trachea, and the membrane at the bifurcation of the trachea have been demonstrated to be the most sensitive areas in the respiratory tract. It is unquestionably an irritation of one or more of these areas which produces the symptoms of reflex cough, and I think it is a similar irritation which produces the symptoms of asthma. Among these areas, according to my experience, the interarytænoidal

has seemed to be the most frequent site of irritation. This is due in many cases to a primary laryngitis, entirely independent of any pathological condition of the nose.

During the past winter I have had a number of these cases and I will report several which differ in some respects, but which all prove that the laryngeal irritation was the provoking cause of the asthmatic paroxysm.

Case I.—Mrs. S., aged thirty years, had suffered all the previous winter and summer with attacks of asthma. In the autumn her difficulty of breathing and cough became so great that her former physician confined her to her room. When I saw her first, on January 1st, she was suffering intensely with asthmatic dyspnœa and periodical spells of violent coughing. This was especially severe during the night. Her chest was superresonant, and numerous rhonchi, dry and moist râles were heard over the chest. The nasal chambers and postnasal space were normal; the larynx was intensely hyperæmic and swollen. She was given the iodide-of-potassium mixture, with codeine for the cough, and a full dose of antipyrine at night. Her larynx was painted with carbolated iodine. After the first application she experienced a certain amount of relief; the râles, however, still persisted and it was only after repeated applications that they grew less, until at length they entirely disappeared. On January 20th she stated that she felt perfectly well. On the 1st of March she left for California. During her stay there she caught a cold, and her cough, with a slight touch of asthma, returned. These symptoms soon disappeared under the iodide-of-potassium mixture, and since then there has been no recurrence.

Case II.—C. W., a merchant, has suffered from attacks of asthma for several years, the seizures coming on with varying degrees of intensity every few weeks. During the last autumn and early winter he had almost continuous attacks, and was utterly unfitted to attend to his business on account of exhaustion and sleepless nights. I saw him for the first time on January 21st. He was then suffering from an attack of asthma. There was great dyspnœa and his speech was typical of the asthmatic subject. The chest was superresonant on percussion, sonorous and sibilant râles were heard, and the expiratory sound was greatly prolonged, being partially obscured by the râles. There was a certain amount of catarrhal degeneration of the nasal membrane, and there was a

chronic ulcer on the sæptum. The mucous membrane in the interarytænoidal space was thickened and congested. The first application to the larynx of carbolized iodine, made with a cotton brush, gave immediate relief, the dyspnœa disappeared, and, as he expressed it, "the tightness of his chest was loosened." The sonorous and sibilant râles could no longer be heard, and they were replaced by a simple harshness of the respiratory breathing. He was ordered the iodide-of-potassium mixture. From this time on the asthmatic symptoms remained quiescent, except at the times when he caught cold they would appear in a modified form. He was then always immediately relieved by local applications to the larynx. I saw him late on May 1st. He reported that since March he had had no return of the asthma.

Case III.—Mrs. J. S., aged thirty, a visitor from Michigan, stated that she had had asthma with violent nocturnal cough for over six months. Dyspnœa was almost continuous and became greatly aggravated during the early morning hours. She had tried a number of asthmatic remedies without relief, and had sought a Southern climate, hoping to obtain some benefit. I saw her first on February 15th. On examination, the chest was found superresonant and numerous sonorous and sibilant râles could be heard. Her nose contained polypi and the larynx was in a state of subacute inflammation. An application of carbolized iodine was made to the larynx; she was given stramonium to smoke and codeine for the cough and also given the iodide-of-potassium mixture.

The night following the application to the larynx was a great improvement on the preceding ones, and with daily applications to the larynx she continued to improve for about ten days, suffering very little at this time from asthma or cough. Nothing was done for the nasal polypi, owing to her disinclination for an operation. About two weeks after her first visit she caught a cold and the asthmatic paroxysms returned in a less violent form. I then removed the nasal polypi, but without any effect on the asthma. Becoming discouraged, she left the city.

Case IV.—J. P., aged sixty, a public officer, had suffered for years with periodical attacks of asthma, coming on, as he stated, whenever he caught cold. I saw him first on March 15th, in the evening. He had just returned to the city from a distant point, and had contracted a cold on the sleeping-car. His breathing was labored and he had the broken speech so characteristic of the paroxysm of asthma. He stated that he had been

suffering with the paroxysm for twenty-four hours, and had been unable to sleep the previous night, owing to difficulty of breathing. Examination showed the presence of mucous polypi in the nose; the larynx was also in a state of subacute inflammation, the chest was superresonant, and numerous sibilant and sonorous râles obscured the respiratory murmur. An application of the carbolized iodine was made to the larynx, and this gave immediate relief; the tightness of his chest was loosened and he expressed himself as feeling much more comfortable. On examination, fifteen minutes later, it was found that the râles had almost entirely disappeared. I saw him the next day, and he reported that he had had an excellent night, that he had slept well, with very little asthma. Daily applications to the larynx for four days restored the respiratory sounds to their normal condition. His voice was perfectly natural and he declared himself entirely free from asthma. No attention was given to the nasal polypi. As constitutional treatment, he received codeine, nitroglycerine, and the iodide-of-potassium mixture.

These cases could be largely multiplied, but that would only be repetition. The cases selected represent types which show certain different conditions. Case I represents a patient with a laryngobronchitis, the nasal chambers being normal. The asthma disappeared after local treatment and the use of constitutional remedies. In Case II we find a laryngeal lesion with a chronic catarrhal condition of the nares. No treatment was given to the nasal or postnasal space, and permanent relief was obtained by local applications to the larynx and constitutional treatment. In each of the other cases, III and IV, there were nasal polypi in addition to the laryngeal lesion. In both cases the asthma was broken without any attention to the nasal polypi. In Case III, in which the asthma returned, the nasal polypi were removed without giving relief from the paroxysms. In all these cases, local treatment was combined with the well-known constitutional remedies. This I think always necessary to give permanent relief from asthma.

If our theory of asthma is correct, we can see the necessity of the constitutional as an addition to the local treatment. We know that, from some still unknown

cause, some persons have a disposition to asthma under the stimulus of local peripheral irritation. Nasal polypus, a laryngitis, or a tracheitis can never produce the true asthmatic paroxysm in an individual unless he has the inherited or acquired asthmatic habit or disposition. The proof of this is evident when we consider the vast number of persons presenting these local lesions who have never shown the slightest tendency to asthmatic dyspnœa. When, however, the disposition is present, either of these lesions can provoke the paroxysm. The local application of carbolized iodine gives relief, partly through its anæsthetic effect, and also through the local stimulation. We see in other cases the same results when it is applied to the nose or the pharynx. Undoubtedly there is also a certain psychical effect, which exerts a powerful influence on the vasomotor nerves. Duclos's treatment of asthma, the local application of aqua ammoniæ to the pharynx and the use of the cautery, probably owes its good effect to this influence.

Paper.

FRACTURES OF THE NOSE.

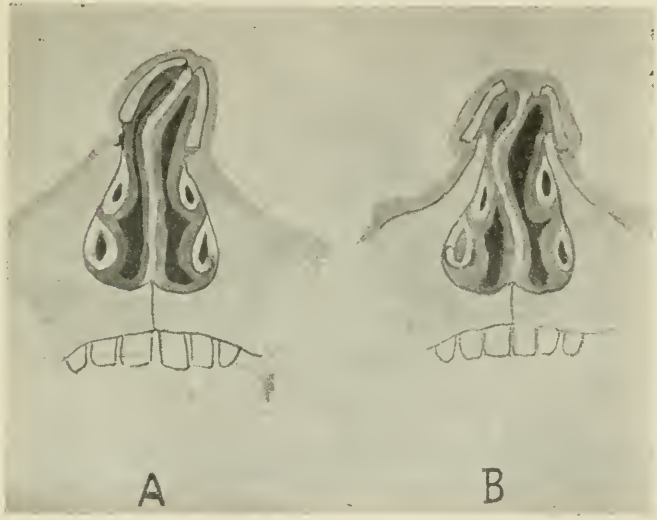
By THOMAS AMORY DeBLOIS, M. D.,

What is commonly called a "broken nose" is the precursor of so many of the deformities with which the rhinologist has to deal, that a short article on this subject should not seem to trespass on the domain of the general surgeon.

Premises.—1. A broken nose is not usually actually broken. 2. The subject can be divided according to the degree of the injury. 3. It may be divided relatively to the parts involved. By my first assertion, I would imply that in most cases there is no fracture of the bone itself; it might be more properly classed as a dislocation. The nasal bones become separated at their internal borders from the nasal processes of the superior maxillaries; this,

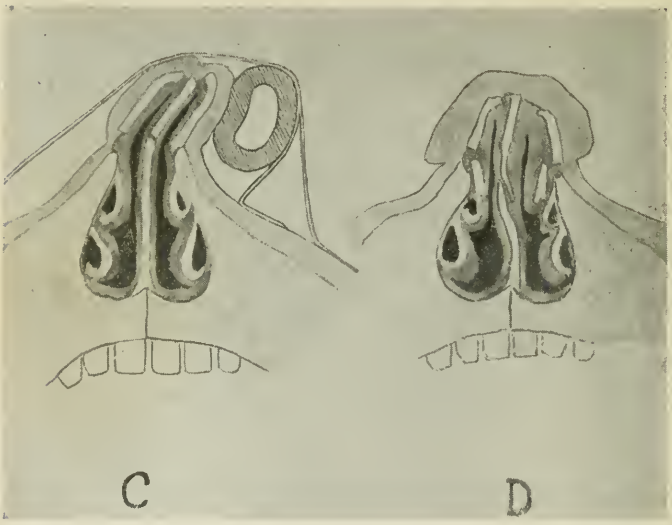
although accompanied by more or less violence, is not in itself a true fracture, and this solution of bony continuity is by far the most common variety of broken nose.

The injury may not alone involve the two small nasal bones (for it is impossible to move one without the other), but it may be more severe, and result in fracture of the nasal process of the superior maxillary or the zygomatic arch of the malar (as from the kick of a horse). In all these cases the bony sæptum must be more or less disturbed, depending, of course, on the degree of the vio-



lence—sometimes not sufficiently to occlude one or the other of the nasal passages, and sometimes almost obliterating one or even both. It is probable that a certain amount of nose-breaking of children is done during parturition, and some other dislocations and deformities of the sæptum are produced during nursing or sleep, by the nose of the infant being pushed into the breast or pillow. After the stage of infancy is passed, the most prolific cause of "broken nose" is falling, running into objects, being struck on the nose with balls, bats, snowballs, etc. The nasal bones are in childhood easily dislocated, and very quickly unite in a vicious position.

The stage of manhood has its own class of fractures. The glove of the sparrer, even if padded, produces many. If the violence is from below (as in the "upper cut"), the injury is generally to the sæptum, and there will be swelling, sometimes abscess and detachment of the cartilaginous sæptum from the bony and from the nasal spine of the superior maxillary. If the blow is from the side, both nasal bones will be dislocated, although their internal borders will remain in apposition with the maxillary. (See illustration A). If, on the other hand, the blow is



from directly in front, the nose will be flattened, the internal borders of the nasal bones generally being driven outward, so that a sharp ridge may be felt on either side of the nose (see Illustration D). In the case of women, the injury is generally inflicted by a bottle, boot-heel, etc., and the lesions are similar to those mentioned above.

Treatment.—The most important treatment is reduction of the dislocation. Unless ether is used, the application of cocaine should be prolonged and frequent. If the injury is recent, reduction is not difficult; careful manipulation with the fingers, assisted sometimes by a thin, flat instrument in the naris, will raise the bones into

place. In many cases, if the patient can be seen frequently and is ordinarily quiet, apparatus can be dispensed with, particularly if the sæptum is moderately straight. If, however, the sæptum bulges on one side, or the nasal bones show a tendency to slip inward, then an internal splint, either hard or soft, should be introduced on that side. An external splint, well padded, over the bony nose will be found useful when the external borders of the nasal bones show a tendency to separate, or, indeed, to protect the reduced nose from a second dislocation. An external splint of plaster of Paris, although heavy, is excellent on account of its perfect fit. If you do not see the patient immediately after the injury, and if taxis will not reduce the deformity, advantage may be taken of the elastic property of rubber to produce a gradual reduction. (See illustration C.)

Case I (office).—John L., aged ten years, ran into something while coasting. The family doctor said his nose would be all right, so I did not see him until ten days after the injury. The internal border of the left nasal was overriding the maxillary—everything was set and fixed. I strapped the nose with a section of thick rubber tubing. (Illustration C.) In three or four days the dislocation was reduced; then I put on a tin external splint. The result was satisfactory, both as to looks and as to usefulness of the nose.

Case II.—I saw Mrs. B. within an hour of the time she fell on the ice. There was some crepitus. I manipulated the nose into a good position, and then put on a tin splint. I had great help from the patient, who used to mould and massage the nose herself. The result was excellent.

Case III.—Thomas M., aged twenty-one, single, a postal clerk, came to the Throat Department of the Boston City Hospital on February 28, 1900, with the history of having been struck in the nose ten days before during a friendly boxing match. The blow was a straight one, delivered from the shoulder, the impact being directly on the tip of the nose. The usual swelling, dislocation, and soreness followed. Digital manipulation was not sufficient to keep the displaced parts reduced. A hard-rubber internal splint had to be used in the left naris (the concave side) and a tin splint externally. At the end of a week, the hard-rubber splint was removed and recovery was good.

Case IV.—Kenneth C., aged eight, a school-boy, came to the Throat Department of the Boston City Hospital on March 2, 1900, with a history of having been tripped up by a companion, and having fallen on the edge of the curbstone four weeks before. There was some swelling, and there was a great deal of flattening of the upper portion of the nose; there were also discoloration and pain. I found that both nasal bones had been spread out laterally, so that the internal borders overrode the superior maxillaries. They were also separated at the top. As a period of four weeks had elapsed since the injury, there seemed very little chance of breaking up the vicious adhesions. An effort, however, was made with elastic tubing, inside and outside, but it was not successful.

Case V.—Joseph H. M., aged forty-two, a teamster, came to the Throat Department of the Boston City Hospital on February 28, 1900, with a history of having fallen from his team a week previously, when he struck on his forehead and nose. There was very little external swelling or deformity, but the nasal bones were separated, and there was a good deal of mobility between them and the bony and also the cartilaginous sæptum. Internal splints of soft-rubber tubing were introduced flat, and afterward an external splint of padded tin was used. The result was good.

Discussion.

Dr. Emil Mayer, of New York: I should like to ask the reader of the paper whether he did not find that the rubber internal splint was irritating to the patient. The use of that form of rubber is one of the reasons why we were compelled to make vulcanite tubes. For myself, I prefer to use pieces of guttapercha, which can be softened by placing them in hot water and molded into shape to fit each individual case, and in this way it is less collapsible than rubber. The ordinary perforated tube answers very well and these tubes have been serviceable in my hands. A recent fracture can be manipulated easily with the use of the elongated forceps, such as we use for straightening the sæptum after cutting operations, and the introduction of a conical tube of rubber or guttapercha. My experience is opposed to the use of soft rubber on account of the irritation of the mucosa caused by it.

Dr. William E. Casselberry, of Chicago: I commend the plan of anæsthetizing patients for the thorough

reduction of fracture of the nose. It is often considered unnecessary to go through the trouble and the subsequent discomfort of general anæsthesia for this purpose, it being considered at the time, both by the patient and by the physician, as a rather trifling affair. But the setting of a fracture of the nose, provided the fracture involves also the sæptum, and perhaps parts of the sæptum much deeper placed, that is, much farther posteriorly than is represented in these drawings, is a very important procedure, especially if there is much swelling or if considerable time has elapsed since the fracture. It is particularly important in children to administer an anæsthetic because the nose is not so large. It is difficult without anæsthesia to explore its deeper recesses, so as to determine the extent of the fracture in children, and the risks of deformity from not effecting a thorough reduction of the fracture are considerable. Of course, there are cases, especially in adults, where the fracture is very simple, perhaps only a nasal bone or a green-stick fracture of the sæptum, where we can readily place the fragments in proper position. But these cases are exceptional. If you wish for thorough reduction of the fragments and an accurate diagnosis, anæsthesia is desirable, and it is preferable to running the risk of a resulting deformity of the nose.

I desire to commend the method of external dressing, in cases where it is necessary, by plaster of Paris. I know that we have had described in literature, and before various societies, ingenious splints of other materials made of metal, and fastened with rubber, plaster, levers, and so on. My objection to these is twofold. First, that they are never at hand when wanted; secondly, that it is difficult to keep them in position at night when the patient is tossing around. They involve, as a rule, splinting the nose along with a small area of the cheeks. My method has been, first, to make a thorough reduction of the fracture, and then to use the ordinary plaster of Paris bandage, having the patient recumbent upon the floor or bed, and molding the dressing across the nose, extending around the eyes, carried back across the cheeks to the line of the ears, being made thinner posteriorly, and secured by tapes passing above and below the ears behind the head. This dressing keeps its position perfectly at night or at any other time. I have not used any rubber appliance, but I have employed the simple expedient of removing this plaster of Paris mask every alternate day, and placing a small pad of cotton to press against any undue prominence, thus keeping the bridge of the nose

in line. The result has been, in my hands, very gratifying, the patient sometimes saying that the nose was straighter after than before the fracture. The only objection to the plan is the grotesqueness of wearing a plaster of Paris mask for the requisite time. Some of my patients wear it for about three weeks, but I do not think it is necessary to wear it such a long time. I believe ten days would be sufficient, but in order to be on the safe side, I generally have them wear it a little longer than necessary.

As regards internal splinting, there is nothing better for this purpose than antiseptic gauze, nosophen gauze, for instance, which can be placed in position after spraying the nose with cocaine, which produces retraction of tissue; and, if the wad of gauze is placed in the proper position, when the cocaine effect passes away, pressure is produced. This gauze can be removed from day to day, and the internal splint accomplishes the same result as that described by the essayist. For the first few days, one must be careful in internal splinting, even with gauze splints, where there is subsequent swelling of the tissues, that too much pressure is not produced.

As regards the vulcanized splint, as mentioned by Dr. Mayer, it is very suitable indeed when the fracture of the sæptum is low down. When the fracture of the sæptum is high up, as depicted in these drawings, it would be worthless, for the pressure produced by it is too low down in the nose. I have had the same difficulty in the treatment of repair of deflections of the sæptum. I have had to supplement the ordinary vulcanite tube by wads of gauze, and to get pressure sufficiently high in the nose to accomplish the purpose of an internal splint.

Dr. Jonathan Wright, of Brooklyn: I have been interested, recently, in reading some old medical books, and I had occasion to look through a Hippocratic treatise. I was very much astonished to find to what degree of perfection the old Greeks had brought the treatment of recent fractures of the nose. I assure you, they were far in advance of anything that we have to-day in the multiplicity and ingenuity of their arrangements for correcting nasal fractures. During the old games of the ancients, fractures of the nose were very common indeed, and the Greeks had ample opportunity for straightening noses. They used nearly all the various methods that are employed to-day, and some others which ought to be used. Hippocrates said that the principal difficulty in straightening the nose was the element of pain; that while they

desired to escape the deformity, the patients were frequently unwilling to bear the pain necessary to correct it. He said that the best thing to raise the sunken nose from the inside was the delicate fingers of a child, which could be inserted into the nose without great pain to the patient, and the fragments raised and held in place. The Carthaginian leather was similar, perhaps, to our malleable materials. One suggestion which is not in common use at present, and which is valuable, is this: He put a single plug in the convex side of the nose. He fastened a leather thong to the tip of the nose, pulled it over, and winding the thong around the head, fastened it to the forehead. It could then be pulled beyond the median line, and by pulling or letting up on this thong, it would allow the nose to take the position desired.

Another very curious expedient resorted to in a recent fracture of the nose, was to insert a plug made from the fresh lung of a sheep. The lung tissue being spongy and elastic, could be slipped into the nose, and probably acted very well indeed as a temporary expedient. He objected also to the things we have occasion to object to to-day, one of which was the use of absorbent material in the nose, on account of its becoming foul in a little while. If any of you will spend a few moments in reading the Hippocratic treatise on fractures of the nose, you will learn a good deal that we have heard to-day, and perhaps some other things.

Dr. John O. Roe, of Rochester: I have been much interested in this subject, and have had considerable experience in the treatment of fractures of the nose. I have been interested, too, in Dr. De Blois's paper, and in the ingenious devices he has proposed for the correction of nasal deformities.

There is one plan of correcting fractures of the nose and maintaining the fragments in place, which I have before described, and to which Dr. Wright has not alluded as having been mentioned by Hippocrates. It consists in the use of a thin metal splint conformed to the external contour of the nose and combined with an internal dressing.

In cases of fractures of the nose where the force has come from one side, we find, almost invariably, a depression of the nasal bone on that side, with an outward dislocation of the bone on the opposite side.

In cases where the blow has come from directly in front, the lower portion of the nasal bone usually slips

outward, and is forced down over the superior border of the maxillary bone.

In correcting such deformities, where there is very much displacement of the fragments, an anæsthetic is almost always necessary, for without it, it is not possible to properly replace the fragments without inflicting unnecessary pain. A small amount of chloroform is, however, usually sufficient. The easiest and simplest plan of replacing the fragments, is by inserting a flat-bladed forceps, similar to Adams's forceps, into the nose, one blade on each side of the sæptum. By this means, a bend or fracture of the sæptum is at once corrected, while at the same time, by forcing the blade of the forceps upward, the whole nose can be put back in place, and, with the fingers on the outside of the nose, the fragments of the nasal bone can be very readily adjusted.

When the dislocation or fracture has been completely reduced, the nose is covered with a piece of heavy adhesive plaster, cut into the proper shape to cover the whole exterior of the nose. This covering of adhesive plaster is found to be of great assistance in holding the fragments in place, and in maintaining the normal contour of the nose. To maintain the parts immovable and the contour of the nose in the desired shape, a metal form is placed on the outside. This can be made of tin, copper or aluminum; the latter is decidedly preferable on account of its lightness. The metal plate is cut to the desired shape and bent or molded to fit the external contour of the nose, coming down on each side to the border of the maxillary bone, but not resting upon them. This form is then held in place by a strip of adhesive plaster across the front of the face.

In many cases this is all that is required to bring about a most excellent result. In some cases, however, displacement of the fragments inward will take place, particularly in those cases where the force is in a lateral direction, requiring an internal support. For an internal support, the hard rubber plug and perforated tubes are entirely inadequate to support the parts, for the meatus of the nostril is entirely too small to admit a tube or plug sufficiently large to be of any service in supporting displaced fragments high up in the nasal vault. It is, therefore, necessary to pack the upper part of the nose with gauze or absorbent cotton; the nose, of course, being first thoroughly cleansed with an antiseptic solution, and the gauze or absorbent cotton made thoroughly aseptic by being sterilized and saturated with a solution of bi-

chloride, one to five thousand. When the upper portion of the nostril is packed, a perforated tube, sufficiently large for respiration and to hold the dressing in place, can be introduced into the lower portion of the meatus. If care is exercised to make the nasal passages and the dressing thoroughly aseptic, the latter can be left *in situ* from three to four days. It can then be removed, the parts cleansed, and a dressing reintroduced.

In all cases where this internal support is necessary, it should be introduced after the adhesive plaster has been applied to the exterior of the nose, but before the metallic form is applied.

In this connection, I should mention a method which I employ for refracturing the nasal bones and putting them in place where they have not been properly cared for at the time of the injury, and where more or less ossification of the parts has taken place. In refracturing these bones, it is important to do so without lacerating the skin. I, accordingly, raise the skin for a short distance from the nasal bone, and insert one blade between the skin and bone, and the other blade on the inside of the nasal bone, which can then readily be refractured without injury to the skin. Then, by applying the same form of dressing as in cases of recent fractures, you have an equally good result.

As Dr. Casselberry has observed, the various elaborate dressings proposed for fractures of the nose are never at hand when they are wanted. This form of dressing, however, that I employ, is always at hand, or can be improvised on very short notice, as illustrated in the following case:

Last summer, while on a yachting excursion, one of my companions was struck on the nose by a swinging boom, with a sufficient force to fracture the nose and knock it somewhat to one side. I replaced the dislocation and, as soon as we got on shore, I secured some adhesive plaster and improvised a metal splint by cutting it out of an empty tobacco can with a stout pair of shears. It was then bent to conform to the nose, and held in place by a bandage tied around the head, across the face, and over the splint. No internal support was required, and this simple device gave us a perfect result.

Dr. Henry L. Swain, of New Haven: I have been much interested in the paper and the remarks on fractures of the nose. I received at one time a valuable suggestion, as regards a method of treating a broken nose, from Dr. Wright. He stated that we ought to attach

more importance to the nasal arch, as such, than we had formerly done, and that, if the nasal bones were deprived of the support of the sæptum, they remained frequently in place, even where the sæptum had been grossly eroded or injured by disease. He also maintained that if the nasal bones were restored to their proper position they would support themselves without the application of splints. After Dr. Wright had made this suggestion, I made up my mind that, in future, unless it was necessary, I would not use any form of splint, either internal or external, but would endeavor to restore the fragments to their proper position and maintain them there. I use splints for these fractures much more rarely than most of you, and I believe I can report just as good successes. In New Haven, we occasionally see a case of fracture of the nose. Now and then, the Yale football team have some poor fellow at the bottom of a scramble, and his nose is liable to suffer in consequence. I also see cases of fracture from boxing and athletic exercises. In correcting the deformity, I use forceps to elevate the nasal bone, opening out the blades, and close them in to force the sæptum back into place. If I cannot do this, I give the patient ether, and, by means of anæsthesia, I am enabled to procure the necessary yielding of the sæptum and to replace the fractured part. In those cases in which I have simply a break to take care of, I get along nicely without applying any splint.

I have only one failure to report at this time. I saw a patient, recently, whom I treated a year and a half ago with good success. Six months from the time I did the operation, he had a perfect nose externally, the fragments being in perfect position, and yet, a year and a half thereafter, he had a falling in on one side. The man fell downstairs, and bumped his nose against the balustrade, and this caused his nose to resume its old position. This is not a contraindication against treating nasal fractures without the use of splints.

Dr. F. C. Cobb, of Boston: I should like to say a word or two in corroboration of Dr. Swain's statement. I think Dr. Clark will agree with me that the broken noses we have had at the hospital in Boston this year have done as well without any splint, except a little cotton introduced below the depressed nasal bone, as former ones on which elaborate apparatus was used.

Dr. J. P. Clark, of Boston: I treat all acute cases of fracture of the nose without splints. In almost every case, the fragments remain in perfect position, when

properly replaced, without any support. I see the patient often at first, and if I should find a tendency to deformity, I would resort to some form of splint. But this has, practically, never been my experience. The secret of success in these cases appears to me to lie in a thorough reduction of the fracture as soon as possible.

Dr. W. K. Simpson, of New York: I desire to speak of a method which I have used recently. You will remember that in a paper read at the meeting of this association in 1898, to which I refer you for details, I spoke of the intranasal use of Bernay's sponge. Since then I have had these sponges made in nasal shape, in which form they may now be procured. I have used them for intranasal splints in various ways, both by themselves, and also by placing them against guttapercha, and I think that they meet all the demands of intranasal splinting and dressing; and as regards the ease of their introduction, and their great absorptive powers, I consider them far superior to gauze, cotton, or anything of that kind. They are also, practically, an absolute safeguard against nasal hæmorrhage. They are compressed in several hundred layers, which permits them to be divided so as to regulate the desired pressure. I have used them considerably in the after-treatment of the Asch operation, for straightening the sæptum. In removing them, they may be removed in their entirety or in layers, the outer layers being removed first. The manufacturers have kindly sent some to this meeting for an inspection. For convenience of procuring them, they are put up in boxes under the name of "Simpson's Intranasal Tampons," and, as such, are sold in the shops.

Dr. W. F. Chappell, of New York: Speaking of Dr. Simpson's splint, I think that I have made a slight improvement on it. I have taken his splint and cut a piece of red guttapercha, such as is used by dentists, into the same shape. A little iodoform collodion will hold the splints together. In this way we prevent the possibility of the splint sticking to the sæptum, a feature of the ordinary Simpson splint which I have found troublesome, as, in removing it, hæmorrhage is apt to result.

Dr. De Blois (closing the discussion): I feel very grateful to the fellows for the free discussion which my short paper has elicited. I recall the case of a carpenter who, in drawing a nail, allowed the hammer to slip, and it struck him on the side of the nose, so that the nose was laid over the cheek. In this case, I used a stiff steel probe on the inside, with my finger under the nose on the out-

side, and lifted it into place. When the nose was put back into place again the noise of the bones snapping was quite perceptible.

I have not touched on compound fractures of the nose in my paper because I consider that they call for another line of argument.

It seems to me, that the operation of Dr. Roe for the artificial reduction of compound fractures would frequently lead to other troubles besides the fracture.

Dr. Roe: Not if you keep the parts in an antiseptic or aseptic condition.

Paper.

ATROPHIC RHINITIS.

By JAMES E. LOGAN, M. D.,

The purpose of this paper is not so much a desire to suggest new ideas relative to the causes and treatment of atrophic rhinitis as to bring to the minds of the members of this association a few points for discussion, in the hope of bringing out more definitely your own opinions and experiences. This much-discussed disease has probably engaged as much thought and careful study as any subject known to our profession, and yet we are to-day as far removed from any definite conclusions in regard to its origin as we were ten years ago.

I trust I shall not lessen the interest in this article at the very outset if I begin by protesting against the multiplicity of terms applied by different writers to this disease. It is an established fact in the mind of every pathologist that there exist well-defined evidences of simple atrophy in certain cases—signs, symptoms, and lesions—just as distinct as in the most typical cases of typhoid fever. In the light of such facts it seems to me useless to encumber ourselves with terms necessarily misleading and confusing. The word ozæna carries with it but the single idea of stench, and it could certainly be discarded. Dry catarrh lacks the dignity of professional nomenclature. Simple atrophic rhinitis is a term thor-

oughly scientific and clearly defines the pathology of this particular disease.

In looking over the literature of this subject one is struck with wonder at the widely varying opinions of men whose conclusions have been derived from the most careful research and whose intelligence is not to be questioned. The physiological function of the spleen has not been more exhaustively discussed, with results less profitable.

A notable feature of nearly every theory has been that, in the light of the author's investigations clinically, microscopically, etc., the deductions have apparently been correct. To illustrate: Hopman believes that in every case of atrophy the distance from the anterior nasal spine to the posterior edge of the vomer is too short, while the height of the fossæ is too great.

Zaufal and Hartman suggest the cause of atrophy to be an abnormally large nasal chamber, whereby the evacuation of secretions by the expired air or by blowing the nose is hindered so that they accumulate and decompose.

Berliner thinks that hypertrophy of the middle turbinate pressing upon the sæptum causes atrophy. Marsh gives four causes, viz.: 1. Diathesis. 2. Germ infection. 3. Changes in the vasomotor system of the part. 4. Necrosis of the ethmoid. Bresgen suggests a sphenoidal and Mayo Collier an ethmoidal suppuration. Wingrave and Capart believe a simple chronic catarrh to be the initial lesion. Löwenberg and others have found that a culture of the coccobacillus would produce the characteristic odor.

Frankel, Krause, J. N. Mackenzie, and others have demonstrated under the microscope the presence of hypertrophy and atrophy in the same specimen. Bosworth has steadfastly adhered to the opinion that purulent rhinitis in childhood is the initial lesion. Michel has suggested the possible existence of accessory sinus suppuration as a cause. None of these opinions is the outgrowth of a fitful imagination, but all are advocated upon purely scientific grounds.

After a careful survey of the literature of this malady, we can sum up briefly the theories of its causation under four general heads: 1. Hypertrophic rhinitis is the initial lesion producing atrophy by mechanically cutting off nutrition to the outer layers of mucous membrane. 2. Suppurative rhinitis in childhood first develops a desquamative disease beginning in the superficial layers of the membrane. 3. Atrophy is the result of a specific germ. 4. Preëxisting suppuration of accessory sinuses produces atrophy by first inducing desquamation of epithelium, followed by attenuation of other tissues, by the constant presence of this product of this inflammation, and the mechanical pressure produced by evaporation of the watery element of the discharge, and the formation of crusts upon the surface of this membrane. Numerous other theories have been advanced, but they have been mere modifications of those just enumerated, and I shall not burden you with any further discussion of them.

The one question which particularly concerns us is, Which of these theories is correct? The only means of arriving at any conclusion is to take up each one separately, discussing its merits and its defects from the standpoint of pathology and experience.

First, we must admit that we have found hypertrophy and atrophy coexisting in the same membrane. It cannot be disputed that hypertrophic tissue may take on atrophy, but the presence of the former is not necessarily followed by the latter condition, as clinical facts have proved. It is entirely possible that atrophy may begin by reason of a distinctly different cause other than the mere presence of an hypertrophic condition.

We do know that a large percentage of atrophic cases occur in young people before the age of twenty years. Is it not altogether reasonable to believe that hypertrophy is less excessive at such age than at later periods in life? Goodale, in an analysis of two hundred cases, found that atrophy occurred with greater frequency between the ages of five and fifteen years; he also found (and this is the experience of most observers) that atrophy occurred twice as often in females as in males. Clinical experi-

ence bears out the fact that we have less excessive hypertrophy in the gentler sex.

In Case I, which I shall report, there existed distinct evidence of hypertrophy in the inferior turbinate body on the left side, yet there remained but little of the middle turbinate bone. In the right side was found a clearly defined hypertrophy throughout the entire nostril. The secretion from the left upper meatus was of a purulent type, as was demonstrated by the microscope, such as is not to be found coming from the ordinary hypertrophic rhinitis. There was no evidence of pus in the secretion from the right nostril, which we repeatedly subjected to the same test. The trophic changes manifest in the left middle turbinate could not explain the presence of pus as we found it.

We naturally look for excessive hypertrophy and hyperplasias in individuals who have suffered through many years, or in cases in which marked deformities of the sæptum have destroyed the function, partially or completely, of one or both nostrils. Consequently statistics, as we have gathered them, furnish good arguments in opposition to this theory of the cause of simple atrophy.

The theory expounded by Löwenberg that a specific germ is the cause of this disease has found many warm supporters. "He has proved the constant presence of a highly pathogenic coccobacillus; large bacilli in short chains, or in masses; generally appearing as diplococci, staining well with gentian violet and other aniline dyes. It is distinguished from the other cocci by the large size." Cornil has verified these results. Abel has contributed much literature in support of this theory, as have Kreig and many others.

The presence of the Löwenberg bacillus cannot be denied, since these investigations have been conducted by many along thoroughly scientific lines. But inoculation experiments have so completely failed that it is hard to believe in the virtue of this theory. We cannot doubt, however, that the presence of the coccobacillus explains the existence of the odor found so frequently.

In 1881 Dr. Bosworth presented an article before the

International Medical Congress in support of the theory that this condition was brought about by the desquamation of the cell elements of the nasal mucosa following the existence of a purulent rhinitis in childhood, and he adheres to his original opinions at the present time. It is very easy to understand how a degenerative process begun in childhood could end in destruction, not only of the mucous membrane, but of the bony tissue underlying. We do know that many children suffer from a form of purulent rhinitis brought about by various causes, the principal one of which is the infection sustained in birth. It has not been my privilege to follow these cases sufficiently long to establish in my own mind this condition as a factor in the development of subsequent atrophy.

I can well understand how this specific inflammation existing in early childhood might eventually produce in neighboring accessory cavities the same type of disease, namely, purulent sinusitis, which by its stubbornness would continue so long as to result in atrophic changes in the nasal cavity. But I do not see my way clear to believing that the nasal cavities alone being involved could establish the proper explanation of the presence of attenuation of this membrane, and at the same time the secreting power of this membrane be not diminished. To explain my point, I cannot understand how this membrane, robbed of its ephithelium, stripped of its glandular tissue, practically devoid of its blood supply, except through minute channels, could maintain the excessive secretion exhibited in these nostrils. It does seem to me that the secretion must come from the neighboring cavities.

If we are to assume that a preëxisting suppurative sinusitis is a factor in causation, we must change our ideas of pathology. In other words, the atrophic process does not take place *ab initio* from sclerotic changes in the membrane itself, but from mechanical influences brought to bear by the constant presence of this discharge upon the surface of this membrane, and, as suggested by Walb, the pressure exerted by these crusts. We have all seen the excoriations of the upper lip produced by the pres-

ence of acrid discharges, such a condition lasting so long as to show marked thinning of this tissue. In adding to this desquamation, due to the presence of irritating discharges from above, the pressure exerted by these crusts, due to the evaporation of their watery elements, might we not reasonably conclude that this was a fair explanation of these phenomena?

The vital objection to all the theories of which I have any knowledge is a failure to account for the immense secretion necessary for the production of these crusts. It is contrary to all physiological law to find secretion where no glands exist, and the microscope fails to reveal glandular cells in a large percentage of atrophied tissue. We also know that the discharges are not from the blood-channels, for such exist in but a limited degree.

The experience of various writers in regard to the initial site of atrophy differs. Frankel, Krause, Mackenzie, and others believe that the inferior turbinate body is the first involved, while many others have found the middle turbinate to be the primary situation. Those who believe that the latter is the first affected are inclined toward the accessory sinus theory.

In laying aside the idea of antecedent hypertrophy as a probable factor, it is not unreasonable to believe that the middle body would be more inclined to atrophy by reason of the fact that its blood supply is more limited and its tissue elements are less resisting. My experience in practically every case has led me to this belief. As I have before intimated in reference to Case I, as in many others, I have seen the atrophic process established in the middle turbinate, while the inferior upon the same side showed but little evidence of the disease.

In 1896 I reported to the Kansas City Academy of Medicine the case of a policeman of our city who had suffered from a suppurative ethmoiditis followed by atrophy of the middle turbinate body. Large crusts would form from time to time, identical with those expelled in clearly developed atrophic cases, affording ample opportunity for microscopical study of the two conditions. Not until after operating did I appreciate the

importance of this case in establishing the correctness of Michel's and Grünwald's theory. In a short time after curettage of the ethmoid body the crusts ceased to form and the patient made a rapid recovery. I did not regard this case as a fair test, since the atrophic condition was of comparatively short standing, the bone showing no diminution and the inferior body not at all involved.

Case I.—Elizabeth S., age nineteen, unmarried, with dark hair and eyes, applied to me for treatment on November 16, 1895. Her family record was good, and she was well nourished. Her history revealed the existence of some nasal trouble of five years' standing. For two years previous to her visit to me she had expelled large green crusts from the left nostril, none from the right. Examination gave conclusive evidence of atrophy situated in the left middle turbinate body. The inferior, if anything, was slightly hypertrophied. Both turbinates on the right side were enlarged.

This patient was treated regularly from the date given until March 16, 1896, with the systematic use of tampons after the manner suggested by Gottstein. The success attending this method was all that could be wished so long as it was continued. From the middle of March to May 2d the treatment was discontinued, the patient herself, however, using tepid salt solution for cleansing night and morning. After six weeks of this I found a reappearance of the crusts and an apparent diminution of the inferior body.

This patient furnished to my mind an ideal case for operation, an opportunity of which I had many times resolved to avail myself; accordingly, on May 4, 1896, I attempted to establish a more perfect drainage of the ethmoid body. I first removed what remained of the middle turbinate, and then by means of a large burr opened up the anterior ethmoidal cells. With a large sharp-edged spoon I curetted away the contents of these cells, composed of thin, bony partition walls, and some granulation tissue. This procedure was kept up until I could pass my probe in all directions without detecting soft tissue. The cavity was thoroughly cleansed with bichloride-of-mercury solution (1-1,000) and dusted well with powdered iodoform and a tampon of proper size was inserted into the middle and superior meatuses. On the second day after the operation I found slight bulging of the eye due to the entrance of air behind the ball, which disappeared

after the fourth day. This wound was dressed every day in the manner mentioned until the evidence of pus disappeared.

The young woman has visited me many times since, and she seems to have made a perfect recovery. The point of special interest in this case, as I have before intimated, was the existence of atrophy of the left middle turbinate at the same time with hypertrophy of the inferior turbinate on the same side and hypertrophy of the inferior and middle turbinate bodies of the right side. After the removal of the tampons each day the presence of pus was very noticeable in that part in contact with the middle turbinate, while the lower portion of the nostril was filled with the ordinary viscid discharge. The secretions from the right side were such as occur in any case of hypertrophic rhinitis.

Case II.—James B., of Scotch parentage, strong, robust, six feet two inches tall, weighing 190 pounds, of good family record, "had never been sick a day in his life." He had had what he called "dry catarrh" since the age of fourteen. He had lived for fifteen years in a dry, sandy country where high winds prevailed—western Kansas. He applied to me for treatment on October 4th, 1896.

Examination revealed the existence of atrophy in both nostrils, almost complete obliteration of both turbinates, and marked attenuation of both inferior bodies. The crust formations were excessive, so large each morning as to require the use of forceps to remove them, and an odor was present.

Obtaining the consent of my patient, I proceeded to perform curettage upon the left side on October 4th; ten days thereafter I operated upon the other side in like manner. The aggravated symptoms, together with daily observations of the discharges, led me to believe that the posterior ethmoidal cells were diseased, and in each operation I opened these cavities thoroughly.

This patient remained under my care about three months, at the end of which time I discharged him in good condition. Occasional visits from him during the period of a year proved the correctness of my diagnosis and the efficiency of my operation. A letter received from him a month since expressed the greatest satisfaction on his part, telling me that he had had no return of

his trouble and that his health in every way was perfect.

I report Case III for the purpose of illustrating, what seems to me, a very good object lesson. As intimated before, the lack of relief in some of these cases operated upon by me, I believe to be due to the incompleteness of my first operation.

Case III.—Minnie M., a young woman of delicate health, came under my treatment in November, 1896. She had been a sufferer from atrophic rhinitis for many years, developing at the age of twelve. The family history of this patient was not good. The father died at an early age, of some lung trouble, and others have not been of the very best health. The younger sister had previously been treated by me for a beginning atrophic process, and upon her I operated in but a partial way.

An examination of this case showed the middle turbinates upon both sides almost obliterated and the inferior bones much reduced in size. Large greenish scales of disagreeable odor were expelled daily. The atrophy had extended to the posterior nares and postpharyngeal walls.

This patient showed much aversion to having an operation, and, being compelled to make her own living, could not afford to lose the time necessary to have it done. Tamponing after the Gottstein method seemed to be beneficial so long as it was kept up, but upon its suspension the condition would be as bad as ever. I finally prevailed upon her to allow me to operate upon one side. It was done about six months after her first treatment began. Without an anæsthetic I opened up the anterior ethmoidal cells and found therein a large mass of broken-down tissue and some granulation material. The outer wall was dense, and the moment it was penetrated the curette met with no further resistance.

At the time of operation I did not believe that the posterior ethmoid cells were involved, and consequently did not remove any part of the middle turbinate bone on that side. Subsequent results have proved to me that I was incorrect, as at the present time the patient suffers from the disease in the posterior nares and pharyngeal vault. Nothing like the amount of material accumulates as formerly did. With the proper care upon the part of the patient she suffers little from the malady. The accumulations are nothing like as extensive, even upon the right side, and, altogether, much good, I think, was acomplished. I have ever since been anxious to complete the operation, but the patient's occupation prevents.

Discussion.

Dr. F. C. Cobb, of Boston: I have been much interested in the paper of Dr. Logan's. After reading Grünwald's book, I find that he believes strongly in the accessory sinuses as a cause of atrophy, and I have been noting the difference in my ethmoid cases as regards the two sides. It seems to me that I can corroborate what has been said in so far that I have found that where there was a distinct discharge coming from under the middle turbinate, there seemed to be almost always atrophy on that side as compared with the other. Further than this, in the cases of ethmoiditis which I have watched for many years, in which the necrosis had extended farther up than I could reach, there has been progressive atrophy.

Dr. Jonathan Wright, of Brooklyn: I have been much interested in Dr. Logan's paper, and I have been much surprised to find that the reader of the paper, as well as the last speaker, laid such emphasis upon the accessory sinuses as the origin of atrophic rhinitis. Doubtless there are cases in which the two diseases are present; but a large number of post-mortem examinations of the accessory sinuses and of the nose have utterly failed to establish this contention of Grünwald's. I read Grünwald's paper carefully, but the examinations made by Dmochowski, Fraenkel, and Zuckerkandl have established pretty conclusively the fact that atrophic rhinitis and sinus disease, while they may dwell beneath the same roof, do not stand in relation one to the other of cause and effect. Nevertheless, it is certainly true that they do occasionally both exist. I have one case in which I have been very much interested; I have watched it for a long time, and it has gone on to such an extent of atrophy that the middle turbinated bone is much atrophied. The inferior turbinated bone, in my experience, is in a large proportion of the cases the one primarily attacked. It has in this case almost entirely disappeared, and upon one side I can watch the widening of the opening of the sphenoidal sinus. At first, it was a mere dot upon the mucous membrane, then it gradually grew wider, so that now a good-sized slate pencil could be put into it, and the interior of the sphenoidal sinus can be seen clearly from the front. The nose is usually full of crusts if it has not been attended to for a while, and you can see these crusts around the opening into the sphenoidal sinus, while the internal cavity is free from them.

It seems to me there is a slight misconception in regard to the pathology and ætiology of this disease, confounding one with the other. We read of atrophic rhinitis following hypertrophic rhinitis in adults or in children. We also read of it following purulent rhinitis, which occasionally exists in children, and as following sphenoidal sinus disease, but this does not in any way elucidate the pathology of the disease. What it is that produces this peculiar condition is very puzzling. In no other place in the body have we a process analogous to this. Sometimes a fibrous atrophy of the liver is cited as an analogous process, but the liver is an entirely different structure, so that we can hardly draw any analogy between the two organs. We have here, in the first place, a metamorphosis of the epithelium. We have an increase in the fibrous tissue, which changes from the hypertrophic to the atrophic form, in which the hypertrophic condition of the stroma is the first thing, and the atrophy the next thing, in which the glands gradually disappear, but usually do not do so entirely. I think the author is mistaken in his assumption that the glands entirely disappear in these cases. If you will take a nip out of the mucous membrane where atrophy is taking place, you will see that the glands are many of them destroyed, but not all, and in other regions in the nose, in nearly all cases, they are present. In these cases crusts form because the secretion is too viscid and does not flow away. By using a little routine detergent treatment, followed by the employment of thymol or menthol, you will start up a watery secretion, the mucus will flow away, and crusts do not form so readily, if at all. The degree of the viscidity adds to the amount of crusts, but not of the secretion.

The explanation which has struck me most forcibly as to the cause of this peculiar pathological process is the one recently advanced by two German observers, Cholewa and Cordes. They have made sections of the bone, and they find in all these cases a rarefying osteitis beginning with a bony hypertrophy, the little canals in the bone containing an artery and vein becoming occluded by the bone changes, and this cuts off the blood supply to the mucosa, so that at first we have, starting as a simple inflammation of the bone, a process which gradually shuts off the blood supply, and this is followed by thickening of the secretion and a metaplasia of the epithelium, and later there results atrophy. It seems to me that this theory is, on the whole, the most plausible one as to the causation of atrophic rhinitis.

Some other observers, following the example of Hopman and Fraenkel, have made anthropometric measurements of the skull, and have established to a certain extent the contention that atrophic rhinitis is due to a shortening and a broadening of the nasal fossa. According to the observations of Fraenkel, atrophic rhinitis is found more frequently in people who have the brachycephalic type of skull. Exhaustive statistics have been published by others, and, if we accept the statements of facts brought forward, they establish without doubt that in German Switzerland, where the brachycephalic type of skull exists very largely, atrophic rhinitis is much more frequent in people of this type. In people whose facial index, as obtained by these observers, is below 50°, the disease is comparatively rare, while in those in whom the facial index is above it, cases of ozæna or atrophic rhinitis are more frequently observed. The only criticism I have to make on these statements is that they are based upon observations made where the brachycephalic type of skull preponderates. It seems to me that, unless we admit that these gentlemen have distorted the facts, we must allow the conclusion that this type of skull is one which has a marked effect upon the number of cases of atrophic rhinitis. We cannot, however, fix upon any one particular cause for this disease, but it probably will be found that there is rather a combination of causes which must be present in order to produce the affection.

Another point is with reference to the question of sex. We know that it is said to be much more frequent in females than in males. With reference to sexual life, it has some relation as bearing upon the cause of this disease. In females the disease becomes most pronounced at the time of puberty. We see few such cases after the menopause. These patients do not all die; they must recover, and therefore in all probability the sexual life in the female, and possibly in the male, is a factor in this disease.

Dr. Henry L. Swain, of New Haven: I should like to emphasize one portion of the remarks of Dr. Wright, namely, that we cannot suppose that there is only one cause acting to produce atrophic rhinitis. There is no question in the minds of most of us but that we have sometimes thought that we had to do with a simple case of the disease, and yet later, as I have lately in my own practice in one case, had to open up the ethmoid cells and scrape them in order to cure the disease. In such cases the ordinary treatment may have sufficed for a cer-

tain time, but the patients have eventually returned and we have had to do something more radical to effect a cure.

As to the theory that Dr. Wright has suggested, where the little canals in the bone containing an artery and vein become occluded by the bony growth. This produces a rarefying osteitis, starting the necessary changes in the mucous membrane to incite the production of atrophic rhinitis. This theory is also exploited by certain observers to explain the production of œdematous rhinitis and polypoid growths on the middle turbinate. It would seem rather improbable that the same choking of the blood-vessels should produce two widely different results. I think you will all agree that it is very uncommon for us to find polyps and œdematous rhinitis existing in conjunction with atrophic rhinitis. Why should a blocking of the blood-vessels in the canal produce one condition in one case and the very opposite in the other?

It is possible that, as the brachycephalic type of nose, referred to by Dr. Wright, is one which cleanses itself with more difficulty than the narrower nose, a less amount of disturbance to the mucous membrane would be required to produce atrophic rhinitis in the broader than in the narrower nostrils, which we are more accustomed to see in this community.

Dr. J. E. Boylan, of Cincinnati: I have seen few cases after the menopause, and a certain number of them have been cured. I have one or two cases in mind now in which the symptoms of atrophic rhinitis disappeared and the patient is well. These are chronic cases and they come to us for a certain length of time and then disappear about the time of the menopause.

Dr. Wright: I have seen few cases indeed after the menopause, and a certain number of them have been cured. I have one or two cases in mind now in which the symptoms of atrophic rhinitis disappeared and the patient is well. These are chronic cases and they come to us for a certain length of time, and then disappear about the time of the menopause.

Dr. Swain will remember some investigations of my own a number of years ago in regard to the different muscular coats of the artery and vein. At that time I held that the vein was much more compressible than the artery, and when the artery was dilated it compressed the vein and in this way produced œdema. I can readily imagine that certain bone changes, by narrowing the lumen of the canal, would interfere with the vein and

produce engorgement of the mucous membrane, etc. Since then I have come to realize that in certain cases the causative factor is some vasomotor change in the blood-vessels, these changes having more to do with causing the œdematous condition than the bone changes proper. In other cases, however, I believe the bone change is an important factor in the ætiology of œdematous rhinitis, or nasal polypi, but in atrophic rhinitis we have to suppose that the bony canals become not only narrowed, but obliterated, to see how all nourishment to the tissues may be shut off.

Dr. William E. Casselberry, of Chicago: Some years ago, in making a study of this subject, I went over very carefully all the different theories that have been mentioned here, and I was impressed with the fact that none of them explained thoroughly the entire field of changes which takes place in connection with atrophic rhinitis. We speak of atrophy in connection with a purulent discharge from the sinuses, and of the incrustation and desiccation of secretions in consequence of it. We see some such cases. We also see cases in which the reverse process is present, in which the middle turbinated body, intead of being atrophied and smaller, is immensely hypertrophied upon the side of ethmoid disease or in cases of empyema of the antrum. Furthermore, I fail to see how empyema of the antrum, or of the sphenoid, or of the ethmoid sinuses will produce the collateral symptoms which occasionally accompany atrophic rhinitis. There is atrophy of the mucosa, not only in the nose, but in the pharynx, extending low down in the pharynx. There is atrophy, failure of development, or early shrinkage of the mucolymphoid tissues, including the tonsils. We find small tonsils in most cases of atrophic rhinitis, or later in life the tonsils atrophy much more quickly than in other people. We find a non-sensitive condition of the mucous membrane, indicating failure of development or atrophy of the sensitive nerves of the part. They are notoriously easy subjects for novices to examine. Students like to get hold of them because they can get good laryngoscopic views. Occasionally there is apparent atrophy of the larynx. I have seen cases of conjoined laryngeal and tracheal ozœna, in which the secretions which accumulated in the larynx and trachea, even to the point of dyspnœa, were similar to those in the nose.

All these changes I cannot reconcile with a strictly local cause in a particular sinus attached to the nose. I had occasion one winter to make exploratory punctures

into the antrum of Highmore in many cases of atrophic disease of the nose, and in the majority of them it was easy to make the perforation; even the bone of the nasal wall seemed to be atrophied and thinner than in other subjects, so that, while not doubting the existence of atrophic states caused by or in conjunction with sinus suppuration, I do not ascribe all cases of atrophic rhinitis to empyema of one or more of the accessory sinuses.

Dr. W. K. Simpson, of New York: With reference to the remarks of Dr. Wright, I have seen marked cases of atrophic rhinitis in women beyond the age of the menopause. During the last winter I had a patient with marked atrophic rhinitis, who told me that she had had it from childhood. She was a woman about sixty years of age, healthy and robust. I wish to record myself as saying that I do not think any one cause can be ascribed for this disease, and that it is in no way due to or associated with hypertrophic rhinitis. I consider the two diseases entirely different, and one is not necessarily dependent upon the other. My experience has been that we see a great many more cases of so-called hypertrophic rhinitis, if we are right in using this term, and how many of them ever reach the atrophic form? Very few. This is simply a clinical fact. I should like to ask Dr. Logan what the result was in the case of the Scotchman.

Dr. Logan: In reply to Dr. Simpson's question, in 1896 the operation was done, and the first of this month the patient wrote me that he had had practically no trouble of any kind since.

There are one or two points that I desire to refer to that have not been brought out in the discussion. The first one is: Where do these secretions come from? We are not able to explain satisfactorily where all this accumulated mass of incrusted secretions is coming from. I do not pretend to say; I doubt whether any one of us can give a satisfactory explanation of the cause of atrophic rhinitis. Whatever the cause may be, I believe there is great lack of drainage.

When I was talking over the matter with Dr. Casselberry, he mentioned a case of atrophy which was entirely relieved by an operation upon the sæptum. I can readily understand that a correction of a deflected sæptum, establishing freer and more complete drainage, would be the factor in relieving this atrophy. In the policeman whose case I reported, curettement of the ethmoid did not entirely establish drainage. I found a small spur in the posterior portion of the middle meatus,

and the removal of that was followed by almost entire relief. He is perfectly free to-day from any atrophic condition.

Paper.

RECRUDESCING ANGINA, DUE TO FRIEDLÄNDER'S BACILLUS.

By EMIL MAYER, M. D.,

This bacillus, first described by Friedländer in 1882, who found it occurring in an attack of fibrinous pneumonia, is an ellipsoid coccus, swelling at ordinary temperature and assuming the form of a clove in gelatin. This microbe of Friedländer belongs to the group of simple saprophytes, frequently occurring in the mucous membrane of the bronchial tubes, rarely invading the lungs, where it grows rapidly before death.

These bacilli have been found in stomatitis, ozæna, rhinoscleroma, acute suppurative rhinitis, in pus in the antrum of Highmore, in membranous bronchitis, suppurating dacryocystitis, and in ulcers of the cornea. All these have been found in local manifestations.

In manifestations by extension they have been found in parotiditis, otitis, bronchopneumonia, purulent pleurisy, pericarditis, pyelonephritis, and meningitis. Generally, they are found in pyæmia and septicæmia.

The first mention of its occurrence in connection with pharyngeal affections was made by Max Stoss in 1895, in *Mittheilungen aus der Schweiz.* The brief report states that a woman, aged thirty, was examined on February 7, 1893, for a pharyngeal affection which had lasted eight days, and whose general symptoms were insignificant. On the right tonsil and slightly on the right pillar of the pharyngeal wall there was a white, rounded exudate, culture from which showed the bacillus of Friedländer in pure culture.

The next cases noted are those of M. Gargam, who handed them over to M. Ch. Nicolle for bacteriological examination.

Five cases in all are reported in the *Annals of the Pasteur Institute* (Vol. xi, 1897) by M. Nicolle, and these cases, with minute description of the bacteriological investigation, form the basis of a *Thèse de Paris,* 1896, by M. Hebert, a student of M. Nicolle's. These two investigators found the bacillus of Friedländer eight times in cultures taken from 1,600 diseased throats. A brief report of the five cases noted here follows:

Case I.—Miss B., aged twenty, was first seen in December, 1895, by M. Gargam. She complained of laryngitis, which attacked her during her singing lesson. Three years previously she had had scarlatina with sore throat. The examination of her throat at present showed white points 3 or 4 mm. in diameter, disseminated over both tonsils, on the pharynx, and back of the right posterior pillar. Their color was pearly white, they were very adherent and difficult to remove with forceps. The surface underneath bled readily after their removal. No glandular swelling, no difficulty in swallowing, and no fever. General condition excellent. On December 4th the laryngitis disappeared, but the plaques on the tonsils and pharynx persisted. Cauterization with pure lactic acid. It was noticed on the following days, that these plaques were increased and thickened on the surface. Certain ones were nearly ½ cm. in width. Patient returned on the 15th of May, 1896, with the pharynx in the same state as at first. Cauterization with galvanocautery at all the diseased points. The burned portions did not again become covered with false membranes, but there were new points hidden back of the tonsil and on the posterior pillar. These were cauterized. By September the patient was cured.

A white mouse, inoculated at the root of its tail, was examined after fourteen hours. The blood gave a pure culture of diplobacilli which showed plainly the bacillus of Friedländer.

Case II.—Miss X., nine years old, had a sensation of heat in the throat which was worse in the morning and caused coughing. Examined on the 12th of January, 1896. On each tonsil there was a small deposit of grayish-brown membrane. No acute inflammation of the tonsils, no pain in swallowing, no fever. In July the patient was again seen. Pharynx in same condition.

There existed on the tonsils the white plaques, very adherent, thickened and leaving a bloody surface when removed. General health continued good. The same results were found as in first case on bacteriological examination.

Case III.—A young man, examined on the 7th of June, had had a sensation of heat in the throat existing for some time. On the tonsils there were noticed pearly white points directly over the crypts, very adherent. There were similar plaques on the posterior pillar of the right, but no swelling and no pain. He was not seen again. The same bacillus was found.

Case IV.—Mme. B., aged thirty-five, was diagnosticated to have the angina of the bacillus of Friedländer. On the 9th of July she showed aphthous stomatitis, gingivitis, and small ulcerations on the tongue and inner portion of the cheek. The tonsils were large and covered with the pearly white membrane adherent to the tissues underneath. They were larger on the right than on the left and 3 or 4 mm. in diameter. Their edges were clear and rounded. Situated below the crypts, they resisted pressure and were not expressed, as in follicular amygdalitis. On the side of their adherence they were very friable and it became necessary to employ the curette for detaching them. The surface of implantation was bloody. On the right tonsil there existed a sort of mucous veil, very adherent, covering its largest part. The pillars also were strewn with points, and there was one plaque on the pharynx. The patient had had many attacks of acute amygdalitis in infancy, pneumonia at the age of seven, bronchitis at twenty-nine, and acute anginas two years ago and last year. At the beginning of her stomatitis she had slight fever, swallowing was difficult, and the glands were slightly enlarged. These symptoms disappeared rapidly. On July 20th the condition remained quite the same, with no pain in deglutition. Cauterization with silver nitrate and lavage with carbolized solutions. Several examinations showed the same bacillus as in the other cases.

Case V.—A girl, sixteen years old, had had variola at the age of two, and acute articular rheumatism at the age of eight. Menstruation began at fifteen, and was abundant and painful. Examination on the 15th of March. She had complained for fifteen days before of headaches and insomnia, also of pains in the legs, which were slightly swollen. Examination of the pharynx showed the tonsils slightly inflamed and hypertrophied. The crypts were covered by false membranes that were adherent.

Tongue red, no pain in swallowing. On the 19th of March there was general erythema, especially on the extremities. During all this time and up to the 29th of March the tonsillar trouble remained stationary and did not disappear until the 10th of April. Same bacillus found.

W. C. C. Pakes, in an article entitled The Bacillus of Friedländer in Pharyngitis and Tonsillitis (*British Medical Journal,* March 20, 1897), states that since November, 1894, upward of 500 serum tubes inoculated from the throats of patients in the wards or out-patients of Guy's Hospital have been examined and the bacillus of Friedländer found five times. Twice it was found on the surface of the serum in pure cultivation, twice in association with the Klebs-Löffler bacillus, and once with the *Staphylococcus aureus.* The five cases are briefly reported and no subsequent observations were possible. Three of the cases were in children and two in men aged twenty and thirty respectively.

Two more cases are reported by A. Billet (*Presse médicale,* March 8, 1899).

In March and April, 1898, Billet treated a certain number of anginas with rather severe manifestations; three of them diphtheritic, all of them in members of the Third Regiment of Chasseurs. Systematic examination of all the throats of the cavalrymen in the squadron where these anginas occurred enabled him to discover two cases of angina with Friedländer's bacillus. The first showed the pneumobacillus associated with the short bacillus of Löffler; the second, pure cultures of the Friedländer bacillus.

The first patient slept in a bed adjoining that of a comrade who some four days previously had had an attack of diphtheria. The entire throat was uniformly red. The tonsils were chronically hypertrophied, and on each, posteriorly and near to the posterior pillar, there was a small plaque, grayish white, which appeared to be formed by the confluence of several white points. These plaques were rather difficult to detach even with a curette. They did not disintegrate when placed in water. Deglutition was painful. Tongue coated, slight elevation of

temperature, no glandular swelling, and general condition good. At the end of three weeks there was still a slight opalescence on the right tonsil.

In the second case, that of a man aged twenty-two, the pharynx was nearly normal except the uvula, which was reddened, the tonsil slightly tumefied, almost entirely covered with a grayish exudate strewn with three small points. The plaque was raised with difficulty and the tonsil bled. Dyspnœa very slight, a cough with no lung involvement, tongue natural, temperature slightly elevated, no headache or swelling of glands. Sixteen days later, there still existed a thin covering, which, on examination, showed no bacilli.

These were all the cases of this affection that a diligent search of the literature has enabled me to find. The following is my own case:

On September 8, 1899, Miss L. D. came under my observation through the courtesy of Dr. John O. McReynolds, of Dallas, Texas. Her history had been briefly presented to the Section in Laryngology and Otology at the fiftieth annual meeting of the American Medical Association, held at Columbus, Ohio, in June, 1899. The study that Dr. McReynolds made of the case led him to the conclusion that the condition was identical with that described by Sir Morell Mackenzie as chronic diphtheria. The case in point differs so widely from ordinary diphtheria that he would suggest the name "chronic recurring membranous pharyngitis" until a more accurate knowledge of the subject can be obtained. The case was placed in my hands, with a request to assist in the elucidation of the problem.

Her history as then presented and subsequently published (*Journal of the American Medical Association,* December 2, 1899) was as follows: "The patient, who is now under my care, Miss L. D., nineteen years old, and in fair general health, I have observed for fourteen months. When uninfluenced by treatment the membrane will recur two or three times a week, and each time will remain one or two days and then become completely exfoliated of its own accord, leaving the throat in apparently a healthy condition. But if it is removed forcibly and prematurely, it leaves a raw surface covered by a glairy material, and readily bleeds on manipulation. The area varies at different times, and it sometimes covers the entire pharynx and soft palate; it always covers the latter.

The specimen which I show to you was taken from the soft palate and before its removal had all the pearly whiteness of enamel, with numerous fine pinhole perforations.

"The microscopic examination which has been repeatedly made, both with and without cultures, has never revealed the bacillus of diphtheria, although the patient several years ago had an attack of genuine diphtheria. The micro-organisms found in large quantities were streptococci and staphylococci, but there is no evidence to prove their causative relation.

"The patient has been able to follow her vocation with only slight interruptions, and the constitutional manifestations have been mild in comparison with the marked local involvement. The disease is entirely distinct from pharyngomycosis and allied affections, and from the various transient forms of membranous pharyngitis. The daily ingestion of raw onions or the local application of strong solutions of iodine or nitrate of silver will keep off the membrane for a period of two weeks, but after using a multitude of remedies, I have found nothing that will produce a permanent cure, although I am confident that the disease will in due time spontaneously subside."

My own notes of the examination made at that time are as follows: Patient is a tall, well-developed young woman in her twenty-first year, is anæmic, and has a liberal supply of acne rosacea on her face. Her general health is good and her complaints are confined to her throat. For nearly eighteen months she has not been free from membrane more than fourteen days, and more often but two or three days elapse from the date of disappearance to the reappearance of a new membrane. It begins with a sense of tightness in her pharynx, and she declares that a new membrane is forming. The soft palate becomes opaque-looking, and a very thin, adherent, and non-transparent membrane may be seen. Scattered through it are numerous blebs, very small in size. It is impossible to remove the membrane at this time. In a few hours this membrane becomes thick and is pearly white. The suffering is great at this stage, and the patient has learned to give herself relief by sticking the point of a pair of scissors in it and making gashes through it. The pain thus relieved, all actual discomfort ends. Exfoliation now occurs, and large pieces may be removed without pain, the underlying mucous membrane being reddened but not bleeding, the membrane is all thrown off and nothing can be noted of any preexisting affection from its appearance.

These conditions remained during the entire month that she was under my observation, except that toward the latter part of her stay the membranes had become decidedly thinner as they formed and covered much less area. There were no skin lesions elsewhere, according to the patient, or any lesions of the vaginal or rectal membranes, on the same authority. No persuasion on my part could induce her to permit examination, with the view of determining the condition of those parts. While of late the membrane had appeared on the soft palate only, it had previously existed on the posterior pharyngeal wall and within the larynx. Pieces of membrane as thick as an egg-shell were removed. Cultures were taken and some of the membrane put on agar and sent to the local board of health for their report. The authorities here examine only for the Klebs-Löffler bacilli, and their report was negative in this regard.

"Department of Health, Division of Bacteriology, Bacteriological Laboratory, Sixth Avenue and Fifty-fifth Street, New York, September 11, 1899.

"Dr. Mayer,

"Dear Sir: The examination of the culture made by inoculating the tube with the secretion or exudate from the throat of Miss L. D., on 9/11/'99, does not show the presence of any diphtheria bacilli.

"Examined by H. T. Cronk, M. D.,
"Assistant Bacteriologist.

"Hermann M. Biggs, M. D.,
"Pathologist and Director
"of the Bacteriological Laboratories."

Pieces of membrane were detached and sent to the pathologists, whose reports are here annexed:

"New York Eye and Ear Infirmary,
"September 18, 1899.

"Pathologist's Report on Case of Miss D. to Dr. Mayer.

"Dear Doctor: Referring to the pseudo-membrane submitted, beg leave to say that it is composed of dead epithelium carrying a large number of micro-organisms such as are usually found in the mouth, also a few threads of leptothrix. Nothing in the way of a germ sufficiently distinctive to account for the existing condition was found.

"Very truly,
"Geo. S. Dixon, Asst. Path."

"Department of Pathology,
"College of Physicians and Surgeons, Columbia University.

"437 West Fifty-ninth Street, New York,
"October 24, 1899.

"Report of microscopic examination of specimens of false membrane removed from pharynx of Miss L. D. by Dr. Emil Mayer.

"The specimens were received both in formalin 5 per cent. sol. and in alcohol 95 per cent., and were examined in sections and in teased preparations. The material consists of squamous epithelium, arranged in layers of from three to six cells in thickness. On the surface of the membrane, between the cells, as well as within them, are very numerous bacteria in the form, principally, of short bacilli (see bacteriological examination by Dr. Lartigau). There is no fibrin present, neither can leucocytes, blood-vessels, connective tissue, etc., be detected.

"Eugene Hodenpyl, M. D.,
"Instructor in Pathology."

The findings thus far having been negative, steps were taken to secure a bacteriological examination. An appointment was made with Dr. Lartigau, and the patient was brought to the laboratory. The membrane was removed by myself in the presence of Dr. Hodenpyl and Dr. Lartigau; the instruments were those of Dr. Lartigau, previously sterilized by himself. I append his reports:

"Department of Pathology,
"College of Physicians and Surgeons,

"437 West Fifty-ninth Street,
"New York.

"Report of the Bacteriological Investigation of Dr. Mayer's Case of Recrudescing Angina.

"The result of cover-slip preparations directly from the membrane and the cultivation experiments are essentially identical in their main findings. Moreover, portions of the membrane sectioned and stained for bacteria presented micro-organisms of the same general morphological characters and the several varieties numerically bearing approximately similar relations as in the film studies from the throat and the plate preparations.

"Without iteration of any technicalities of purely bac-

teriological interest in the narrowest sense, the main cultural and cover-slip studies may be briefly summarized in the following:

"A number of films made directly from the membrane *in situ* (half a dozen) were stained, some with aniline-gentian violet (Sterling's), others with alkaline methylene-blue; the remaining cover-slips were treated with Gram's iodine stain and Welch's capsule stain. They all contained very many short, rod-shaped organisms with blunt ends, with no noteworthy or predominant disposition. Many were mistaken for cocci, more especially those showing a diplo-arrangement and capsule formation. Welch's method brought out the capsule formation very distinctly. When treated with Gram, the organisms lose their stain. In addition to the above, a few groups of large tetrad cocci were made out which did not decolorize by Gram.

"*Cultural Studies.*—Aerobic and anaerobic plates were made in agar-agar and gelatin; blood-serum tubes were likewise inoculated. All showed abundant growth at the end of thirty-four hours. No difference was observed in the cultures grown in the presence of oxygen from those placed in anaerobic conditions. The predominant organism consisted of a short bacillus possessing coccoid tendencies, the colonies of which were small, round, pin-point or somewhat larger, grayish colonies, finely granular. In each Petri dish from 2 to 8 large, thick, milky white colonies were present, which in cover-slips showed cocci having an indefinite tetrad arrangement.

"The predominant organism was identified by all known tests as the *bacillus of Friedländer;* the cocci as *Micrococcus tetragenus.*

"*Animal Experiments.*—One cu. cm. of a 24-hr.-old bouillon culture subcutaneously inoculated into a guinea-pig produced no apparent reaction; a similar dose subcutaneously into a rabbit resulted negatively; two cu. cm. of a similar culture, introduced intravenously, inoculated into a rabbit (full-grown) likewise showed no pathogenic disposition for this animal.

"*Remarks.*—Notwithstanding the lack of pathogenicity of the bacillus of Friedländer for the animals mentioned under the conditions described, it seems likely that this organism is the ætiological factor intimately associated in causative relations to the angina of the throat. The invariable predominance of it (indeed, always in almost pure culture) in the membrane, films, and cul-

tures is so suggestive that to discard it from any ætiological importance seems inconsistent with the facts, although not so in a rigorous sense.

"August Jerome Lartigau."

Bacteriological Report.

"*Study of Smears from the Membrane.*—These were made from portions of the membrane removed from various parts of the pharynx, uvula and soft palate. The study consisted of an examination of specimens stained with aniline-gentian violet, carbol-fuchsine, alkaline methylene-blue, thionin (Roux), Gram's, and Welch's methods of coloration. In addition to a few large squamous epithelial cells, polymorphonuclear leucocytes and some granular débris, the cover-slip preparations invariably showed two micro-organisms, a bacillus and a tetrad coccus, the latter occurring very infrequently and in small numbers. Subsequent cultural examinations proved this organism to be the *Micrococcus tetragenus.* The bacillus was so manifestly predominant in all the smears that for practical purposes it could be regarded as being present in pure culture.

"Apart from slight morphological variations dependent upon the tinctorial procedures employed, the predominant organism presented strikingly similar appearances under the different conditions of study. The disposition was quite constantly that of a diplobacillus, sometimes discrete in its arrangement, but equally often irregular masses of bacilli could be observed. For the most part it was a moderately thick organism, slightly longer than thick, and quite short, with rounded ends. Indeed, the earliest impression led one to believe that they were diplococci. In all instances the staining was regular. Capsule formation was quite constant and well observed in those specimens which were prepared according to Welch's method; one capsule generally included two members. Decolorization was complete with Gram's stain.

"*Cultural Behavior.*—Bits of the membranous exudate were taken from several parts of the throat and directly placed in bouillon. From the emulsions prepared in this manner agar- and gelatin-plates were made of different dilutions, the agar plates incubated at 37½° C. under both aerobic and anaerobic conditions, whilst the gelatin plates were all aerobically grown at room temperature. At the end of thirty-four hours the agar cultures of low dilutions contained many small, discrete,

pin-head-sized, white oval or round colonies. The growth of the gelatin plates was manifestly less active and less abundant. Examined under the low power by transmitted light, the deep colonies were either round or oval, more or less sharply defined, finely granular, and yellowish in color. The surface colonies, in addition to being larger, were also thicker and white in color. Insignificant differences of growth were observed in the cultures grown with free access to oxygen and those cultivated anaerobically. All the plates contained from one to eight colonies (readily distinguishable) of the *Micrococcus tetragenus.* The growth of the diplobacillus was active in all media.

"*Agar-slant.*—More often the appearances were those of a pneumococcus growth—small discrete colonies. Sometimes the culture consisted of a mucus-like, rather thick, moist, white diffuse streak.

"*Blood serum.*—The appearances were those of growths upon agar.

"*Gelatin stab.*—Small discrete and white colonies along the line of inoculation. The gelatin was not liquefied at the end of twenty-two days. On the surface the growth was somewhat thick and elevated; only occasionally, however, was the so-called 'nail-shaped' growth typical. In a few of the stab-cultures a few gas-bubbles developed.

"*Bouillon.*—Diffusely cloudy at the end of thirty hours in some cultures; in others cloudiness very slight.

"*Dunham's peptone solution.*—The behavior practically the same as in bouillon. No indol reaction.

"*Litmus milk.*—Acidified and slowly coagulated.

"*Potato.*—Sticky, brownish yellow, thick growth; gas-bubbles commonly observed.

"*Sugar media.*—Gas formation with dextrose, lactose, and mannite. The organism in cover-slips from cultures on various media exhibited in many particulars the same morphological features observed in the films from the throat membrane, but differing from it in numerous respects—the diplo-arrangement was distinctly less evident, the bacilli generally larger and not infrequently filamentous; moreover, capsule or spare formation were not noted. Hanging-drop preparations were repeatedly studied, but no motility was ever detected.

"*Animal Inoculations.*—Two full-grown guinea-pigs were inoculated subcutaneously with three and five cubic centimetres, respectively, of an emulsion made in bouillon with portions of the membrane taken from the throat. The pig which received the larger dose died at the end of

nineteen days. The anatomico-pathological findings were nil, but the inoculated organism was recovered from the spleen. A number of rabbits were likewise inoculated with varying doses of the same emulsion, but the results were totally negative. Pure cultures introduced both beneath the skin and intravenously failed to induce any untoward effect except in extremely large doses. In one rabbit the throat was slightly scarified, then rubbed with a pure bouillon culture, but the effect was again negative. Experimental inoculations of the *Micrococcus tetragenus* into guinea-pigs and rabbits similarly gave no better results.

"*Bacteriological diagnosis.*—Bacillus of Friedländer.

"*Remarks.*—Any interpretation of the results obtained in this restricted study must perforce be cautious; the limitations of an investigation of this order are too manifestly obvious to necessitate any instance. Several facts of importance should not be dismissed without due consideration in the determination of the relation of this micro-organism to the clinical presentation of the case—the predominance of the bacillus of Friedländer in all the cultures and practical absence of all other microbic species. Furthermore, the organism in question is known not to be commonly present in the mouth or throat in such numbers. Over against this, the almost complete lack of virulence militates strongly in any causal association to the lesion produced.

"August Jerome Lartigau."

The cases here presented must all be studied together in order to determine their similarity. The conclusions arrived at by Pakes and Billet are in accord with those of Stoss, Nicolle, and Hebert, who find that this malady shows itself in two forms, acute and chronic. The symptoms are different in both cases.

In the subacute form, we find on the tonsils the false membrane, whitish brown or pearly, somewhat adherent, and on the pillars of the walls of the palate. The subjacent tissue is slightly inflamed.

In the chronic form, the tonsils are strewn with white points, pearly or yellow elevations of dimensions varying from 1 to 5 mm. and more in diameter. The border is round and clear. They show not only on the tonsils, but invade the pillars, the palate, and the posterior surface of

the pharynx. They adhere closely to the subjacent mucosa, which appears bloody or very slightly inflamed.

If we attempt to remove them with a tampon of cotton, only the superficial portion comes away. It is necessary to use forceps or curette. The white points removed are slightly friable and are easily separated with a pin, but, thrown into water, do not dissolve. We have, then, a false membrane in the strictest sense. These false membranes rest mostly below the crypts of the tonsil and are adherent. Expression of the tonsil is not followed by their exudation from the crypts. After they are removed they reproduce on the same place with rapidity, increasing in size. In spite of this, there is no tendency for them to join one to the other, forming a continuous membrane as in diphtheria.

In a microscopic examination of the false membrane we find epithelial cells of the pavement variety, very rarely leucocytes, with some filaments of fibrin; numerous bacilli of Friedländer, ordinarily small but polymorphous; certain cocci; elements of leptothrix.

The false membranes show the following constitution: Superficial form of fibrin, débris of pavement epithelium and white globules in which are a large number of bacilli of Friedländer. In the deeper portion leucocytes are found.

Symptoms.—Occasionally there is a sense of heat and dryness in the throat, inciting a desire to cough or frequent attempts to swallow. Often the functional signs are nothing, and it is only by chance that the patient perceives the white spots in the back of the throat. There are no pain in swallowing, no troubles of the voice, and no swelling of the glands.

The general signs of the subacute form that may exist previously are some fever and a little lassitude and headache.

In the chronic form the general symptoms are absent; there is neither elevation of temperature nor interference with the appetite, neither diarrhœa nor constipation. There are no respiratory, circulatory, or urinary

troubles. In one case general erythema was noticed. Could this have had any possible relation to the bacillus? It is known that in the septicæmia due to this micro-organism, purpura may occur.

We know nothing of the mode of entrance of these anginas. In certain cases the affection lasts from two weeks to three, while in the greater number it is chronic, persisting many months without our being able to fix the duration. The chronicity of these anginas need not surprise us when we remember that the bacillus of Friedländer occurs often in affections of long duration, as in certain forms of membranous bronchitis, dacryocystitis, and otitis, probably in rhinoscleroma, and perhaps in ozæna. The tendency to recurrence is shown by its rapid return after removal. The prognosis is good. The affection is cured spontaneously in the subacute form or recedes under treatment.

Clinical Diagnosis.—This is very easy if one bears in mind the symptoms already mentioned. Besides the exudate, there is nothing to show that we have to deal with an acute angina, especially one of a diphtheritic origin. Besides, the diagnosis is readily made by the presence of the white deposit on the pharynx without symptoms. In pultaceous anginas the symptoms are alike. The membrane in the former is easily removed and dissolves in water. In pseudo-membranous anginas there are numerous general symptoms. In chronic lacunar amygdalitis the masses are seen at the crypts, when pressure is exerted they exude, and all the symptoms of constitutional disturbance are present. Calcareous concretions are very hard and exist in small number. In leptothrix there is much similarity, but microscopic examination will show the difference at once.

The following conclusions are reached by Nicolle and Hebert: There exists a group of subacute or chronic anginas which have distinct clinical characteristics. The membranes are pearly white or whitish brown, slightly elevated, adherent to the subjacent membrane, and recurring rapidly on removal.

Functional Symptoms.—These are next to nothing. There is resistance to treatment in the chronic form, which is most common.

These anginas are due to the bacillus of Friedländer, which we find in great abundance in the false membrane. In the clinical aspect they appear much like leptothrix, with which they have been several times confounded. Bacteriological examination always assures the diagnosis.

The bacilli of Friedländer isolated from their patient presented the morphological and biological characteristics which are to be found in the classic description of this bacillus; already presented in the body of their work.

The similarity of the cases found in literature and the one presented by myself is striking, there being the same rounded character to the edges, the same pearly points strewn through the membrane, the same adhesiveness in the early stages, and the same bacilius in pure culture.

Some points of difference should be noted. In but one of the other cases was there a continuous plaque. In my own case the entire soft palate was covered, the pillars were free, and the posterior wall had its independent membrane. In none of the recorded cases was there any exfoliation; in my case there was, and for from one to fourteen days at most there was a respite, when the membrane formed anew. In this essential particular there was a difference. The chronicity, the absence of any constitutional signs, the membrane formation, and the bacillus, which, inoculated, was subsequently found in the spleen of an animal, permit but one answer to the question of diagnosis, and that is, that we have undoubtedly to deal with a case of chronic angina due to the bacillus of Friedländer.

One point in the differential diagnosis of my case must not be overlooked, and that is the possibility of malingering. It is known that a lymph exudate may be occasioned on the pharynx of guinea-pigs if applications of ammonia water are made, and a case is recorded in which a young woman introduced cantharides powder

into her mouth (Alex. Haslund, *Hosp. Tid.,* 1899, No. 9), producing stomatitis.

This question of malingering was therefore here raised and negatived to my mind, her attending physician also stating that he had no doubt whatever as to the genuineness of her trouble, and that he had failed to discover any proof of sexual perversion. He further states: "I have found that when I could prevent the appearance of the membrane in the throat for a while by local applications it seemed to develop in a modified form in the external canal of the ear, with some involvement of the middle ear. This would certainly exclude the question of malingering.

"Regarding treatment, nothing seemed to be of any avail during the time I saw her, but, in a later communication, I am informed that an alcoholic solution of orthoform will render her perfectly comfortable at all times, and not only this, but diminishes decidedly the severity and frequency of the membranes. Iodine solution adds to her comfort."

Finally, the conclusions we arrive at from a study of these cases, are:

1. That anginas due to the bacillus of Friedländer may exist in a subacute or chronic form.

2. They occasion no distress, except perhaps in the beginning of the membranous deposit.

3. They may appear in membranous form, exfoliating and recurring.

4. In the chronic form treatment seems to be of no avail, the bacilli eventually becoming much less active, and the condition ceases by limitation.

5. They are probably much more frequent than the few recorded cases seem to indicate.

My thanks are due to Dr. McReynolds for the opportunity given me to study this remarkable case and to Dr. Percy Fridenberg, of this city, for an artistic representation of the existing condition.

Discussion.

Dr. J. E. Boylan, of Cincinnati: During the reading of Dr. Mayer's paper I was forcibly struck with the resemblance of the symptoms in his case to the few cases of chronic herpes which are recorded, two of which have come under my observation. As I now recall them, these presented almost exactly similar features to his—the location and character of the membrane, the fact that he was able to detect vesicles, the absence of constitutional symptoms in the protracted, and the fluctuating course of the disease, suggest chronic herpes very strongly, and for that reason the paper is especially interesting to me. As far as I am aware, no micro-organism has as yet been held accountable for chronic herpes, though various symptoms, such as the fading of the attack at one point and its development at another, seem to indicate such activity. May not the bacillus of Friedländer have been the underlying cause in one or the other of these cases? I hope Dr. Mayer will give us his views as to the possibility of a relation of the two affections in closing the discussion.

Dr. Henry L. Swain, of New Haven: I should like to inquire of Dr. Mayer whether those cases in which the Friedländer bacillus was found in the membrane were all of the chronic recurrent type.

Dr. A. W. de Roaldes, of New Orleans: I should like to ask Dr. Mayer if the membranous formation was always found in the throat or if, on the contrary, it was observed at any time in the nasal passages.

Dr. Jonathan Wright, of Brooklyn: Dr. Boylan in his remarks spoke of the resemblance of these cases tc those of herpes. I did not hear all of the paper, but these cases resemble some I have seen pictured under that name in charts. The bacillus of Friedländer is found frequently in acute inflammations of the throat and nose of all kinds.

Dr. Mayer: As regards the question of herpes, there is no connection whatever between herpetic eruptions and this class of affection. It is known that herpes is a very obstinate affection, yet it has its limitations and is by no means so persistent as this disease. All the cases that have been reported, and altogether they number but fourteen, while they were of a persistent nature, were not of the chronic recurrent type, and that was the remarkable

condition which existed here. Membrane did not exist anywhere in the nose, as I understood Dr. de Roaldes to ask about, but was limited entirely to the soft palate, and the posterior pharyngeal wall, although in one or two cases it existed in the larynx and produced marked stenosis.

I should like to say, too, that, according to the statements of those who have made a study of this class of affections, the bacillus of Friedländer does not exist in acute conditions, but in the chronic diseases, as in rhinoscleroma, etc., and this is not uncommon.

This case is remarkable in that it presented a condition that has been seen by a great many observers, and each and every one of them was compelled to say that he had never seen the like. Large quantities of membrane formed, with peculiar exfoliation, leaving apparently healthy tissue, then two or three days later, or at most fourteen days, the patient would go through another attack, when there would be the formation of membrane, and exfoliation, leaving again apparently healthy membrane. This is something unusual, and the diagnosis made in this case, that it was due solely to the bacillus of Friedländer, seemed to be the only possible one, in view of the history and the bacteriological examination.

Paper.

A PLEA FOR EARLY NAKED-EYE DIAGNOSIS AND REMOVAL OF THE ENTIRE ORGAN, WITH THE NEIGHBORING AREA OF POSSIBLE LYMPHATIC INFECTION, IN CANCER OF THE LARYNX.

By JOHN NOLAND MACKENZIE, M. D.,

This is a very important subject, Mr. President, and I hope you will allow it the utmost latitude of discussion. For my own part, I shall be as concise as possible, and shall only call attention to certain phases of the question which, in view of its unsettled state, seem to me to be of most pressing and immediate importance. Leaving out of consideration the probable existence of a cancer bacillus and the possible future detection of the disease through the blood and secretions, there remain, in the

present state of our knowledge, three principal methods of diagnosis in laryngeal cancer. These are, in the order of their practical usefulness and importance: 1, the naked-eye method, or diagnosis by direct inspection supplemented by clinical phenomena; 2, thyreotomy; and, finally, 3, the microscope. Of the three methods, the second is often included in, and therefore ancillary to, the first.

It is impossible to exaggerate the importance of naked-eye diagnosis in the detection of laryngeal cancer. Take it all in all, it is by far the most practical of the three methods. Unfortunately, in most quarters it is relegated to subsidiary place. Even the best of laryngeal surgeons lose no time in procuring portions of a suspected growth for microscopic examination before they have gone thoroughly into the history of the case and carefully endeavored to make the diagnosis with the naked eye alone. Every resource and refinement of clinical diagnosis should be resorted to before an appeal to the microscope is made.

As the advanced workers in the field of general surgery have, in the differentiation of tumors, come less and less to seek the counsel of the pathologist, except as a court of the very last resort, so should we teach ourselves to depend more and more upon the naked-eye appearances in the diagnosis of tumors in the windpipe. I wish to insist with emphasis upon the importance of cultivating this, comparatively speaking, neglected method. Detection of the disease by direct ocular inspection seems a simple enough proposition, but how often is the principle involved directly violated by the diagnostician! We need not go beyond the laryngological records of the immediate present for proof or illustration. Search the literature of to-day—alike in text-book and periodical—and see how comparatively little reliance is placed upon clinical signs and symptoms, and how quickly the aid of the microscope is invoked, and often with what disastrous results. The removal of the "piece for microscopic examination" too often means only the beginning of the end.

The trained surgeon of to-day discriminates with marvelous accuracy (with the naked eye) between the different varieties of benign and malignant growths, and we should cultivate and encourage a like amount of skill in the diagnosis of laryngeal tumors. There is, unfortunately, no solitary unequivocal symptom or laryngoscopic sign of cancer. The diagnosis must be made by grouping together, when present, both the local and general phenomena. In a large proportion of cases the existence of the disease at an early stage may be detected in this way, and not until all the subleties of the diagnostic art have been exhausted should we resort to other modes of diagnosis.

But suppose, after weighing carefully all the facts of the case in our possession, a reasonable doubt remains as to the diagnosis, shall the next step be the removal of a portion of the diseased structure for examination? In the face of all authority to the contrary, I say, emphatically, No. Before even considering such a proposition (if it be considered at all), the suspected growth should be examined from every point of view, for in this manner alone can we give the naked-eye method its full measure of usefulness. This is best accomplished by the second method, thyreotomy, or, if necessary, even more extensive external division of the tissues of the neck. Thyreotomy is always justifiable in such cases when laryngoscopic examination either leaves a reasonable doubt as to its true nature, or manifestly fails to define the exact territory occupied by the disease.

Much has been said in recent years about the dangers of thyreotomy, and we are told that we must not operate if the lymphatic glands of the neck are involved. If there is any chance of saving life, I believe a preliminary thyreotomy to be justifiable, even in the presence of external glandular involvement, provided such involvement is not, on its face, too extensive. More than that, if, on thorough exposure of the parts—assuming, of course, that there is no serious contraindication to operation—it is found that the disease can be thoroughly eradicated, even if such eradication should involve deep dissection

of the surrounding tissues of the neck, it is far better to give the patient that chance of life than to allow him to drift on to certain and horrible death. As Jacobi said of opening the windpipe in diphtheria, if we saw a man hanging by his neck, we should not hesitate to cut the rope because the individual was in the last stages of tuberculosis or cancer. So in the class of cases we are considering. We have no right not to give our patients every possible chance, even though the statistics of the past may possibly be against us. We want new statistics—statistics based on more accurate cooperative work.

Much can be learned by this method, but it, too, has its limits of usefulness. For, while it alone may establish with certainty the existence of cancer, it often fails to define with absolute accuracy the whole area covered by the morbid process. We can, therefore, never be perfectly sure, especially in cases in which the cancer appears as a diffuse infiltration, that we have the entire disease before our eyes. For, as I have formerly pointed out, as it is often impossible to indicate with exactness the extent of the trouble laryngoscopically, so after division of the larynx, and even after the removal of the latter organ from the body, it is by no means always possible to map out the entire distribution of the affection.

But suppose, after division of the larynx, there still remains the faintest trace of uncertainty as to the diagnosis, are we justified, under the circumstances and at this stage, in removing a portion of the growth for examination? Or, to make the question still broader, is partial extirpation of the tumor ever admissible even for the purpose of microscopic diagnosis? Only as a measure of the very last resort.

Before resorting to thyreotomy in general, especially if a portion of the growth is to be removed for examination, it should be clearly understood with the patient that, if the disease should prove to be cancerous, the surgeon shall be at liberty, if in his judgment it seems best, to proceed at once to operation.

The objections which I would urge against removal of tissues for examination (especially when done through

the natural passages) are: 1. It subjects the patient at once to the dangers of autoinfection at the point of incision and to metastasis elsewhere. 2. It stimulates the local growth of the cancer. 3. Finally, the method is often inconclusive, misleading, and sometimes practically impossible.

The moment the continuity of the growth is broken, in that very moment is opened the pathway for self-poisoning, and an unfavorable influence is at once excited on the local process. This is the solemn lesson which I have slowly learned from a sad experience in the past.

Cancer is an infectious process. Whether it be due to a bacillus, which is probable, or whether its activity be due to some vital principle inherent in the cancer cell, incision through the cancerous mass opens up at once a broad avenue for autoinoculation.

When I look back through the years in which I have seen cancer of the larynx maltreated and in which I have maltreated it myself, I am simply appalled at the retrospection. And yet, incredible as it may seem from the standpoint of the modern treatment of cancer, the universal sentiment of authority is to-day practically unanimous in advising removal of portions of the suspected neoplasm as an early and routine method of diagnosis!

The latest *ex cathedra* monograph on the subject, fresh from the press, on whose pages the ink is scarcely dry, not only advocates this, but also recommends (at least in the early stages of cancer) the endolaryngeal method, devoting seven pages to its consideration, and only two to the more radical measures!

Early diagnosis and therefore early radical treatment is of prime importance in all diseases, but especially so in cancer of the larynx. Many other affections may be aborted or controlled by comparatively simple agencies. In tuberculosis, for example, we may invoke the powerful aid of climate; in syphilis the unfailing action of certain drugs; in diphtheria the almost magic influence of antitoxine; but in cancer our only appeal is to the knife. Serum therapy will some day play the most conspicuous rôle in the treatment of this disease. For surgical treat-

ment, to be sufficiently radical, involves the sacrifice of so much tissue that the time must surely come when surgery will be supplanted by simpler and more certain means, and with the discovery of the agent of infection will come its antidote. But to-day the knife is our only means of cure. How can we best employ it?

The general principle of treatment in cancer of the larynx is sufficiently simple. It is, or should be, identical with that which governs us in the treatment of cancer elsewhere in the organism. Total extirpation, through liberal portions of healthy tissue, of the growth, together with the neighboring area of possible lymphatic infection, is the cardinal principle of surgery in the treatment of this disease, for by no other method can it be thoroughly eradicated.

The surgical treatment of laryngeal cancer has resulted in failure in the past because the methods employed have not been sufficiently radical. Thyreotomy with curettage or partial removal and partial and complete removal of the larynx have fallen far short of success simply because they have not completely removed the disease. The records of the future will show that the reason so many cases have terminated in failure and death is because the disease has only been partially removed. As long as we have lymphatics to carry infection and glands to become infected, so long will the patient be subjected to ultimate danger. There is only one rational method, in the majority of cases at least, of dealing with cancer of the larynx. Early total extirpation of the entire organ with its tributary lymphatics and glands, *whether the latter are apparently diseased or not*, is the only possible safeguard against local recurrence or metastasis. By no other method can we give the patient a reasonable assurance of a permanent lease on life.

The surgeon who is abreast with the times does not trifle with cancer in other organs. Why should the larynx be made the exception to the rule? I am told that there are some gynæcologists who still curette the uterus for cancer and some surgeons who still remove half the breast in that disease, but, like the Democrats who still vote for

Andrew Jackson for president, they are becoming every day more and more hopelessly in the minority. We shall have to learn the same lesson here that we are slowly learning in the case of cancer in other parts of the body. It is the same old fight, and the same old obstacles will have to be overcome.

It is often impossible by inspection, either with the laryngoscope or after preliminary division of the thyreoid, by transmission of light, or by the sense of touch, to limit the extent of the disease before operation. As I have demonstrated, even after the removal of the larynx, the disease may be apparent in one side of the organ and not in the other, and yet the microscope show extensive carcinomatous deposit in the seemingly normal side. Especially is this the case in diffuse infiltration or when the epithelioma originates in the deep-seated tissues and does not approach the surface until a late stage of the disease. The loose tissue beneath the mucous membrane in many places and its wealth in lymphatics often favor from a small focus of infection infiltration of other portions of the larynx, and sometimes with great rapidity. Diffuse infiltration, even though confined to a small area, should always awaken suspicion of the existence of the disease elsewhere in the organ, even though no apparent signs of its presence exist.

It is also possible that in a more or less advanced stage of cancer of the larynx, or even in its early history, we may find young cancer cells in the lymphatics, as Halsted has demonstrated in the case of cancer of the breast.

In the presence, therefore, of the fact that it is often impossible to limit the diseased area by inspection and the sense of touch, and in the light of the revelations of the microscope, it becomes a serious question whether we accomplish any lasting good by any operation short of complete excision of the larynx and the neighboring lymphatics and glands. Certainly, if the disease approaches the middle line, the imperative necessity of complete removal must be apparent to the most timid and doubting operator.

Confronted by this uncertainty, the position of the surgeon is a most responsible one. Operations of this class should only be done by surgeons of acknowledged skill, both in operation and technique, and with a conscientious recognition of the ethical relations of operator and patient. In considering this question, I am profoundly impressed with the solemnity of the issue involved. It is not a theory, but a condition, that confronts us. Beside the question of saving life, all other considerations pale into insignificance. We special workers in the field of laryngology must cast aside our pride and recognize the fact that, while our achievements may be brilliant in the domain of endolaryngeal surgery, when it becomes a question of extirpation of larynx and lymphatics, we must seek the aid and counsel of the general surgeon. We must work together, the one dependent on the other.

It is not so very long ago that excision of the breast was looked upon as a formidable and deadly operation, but this idea has been dispelled by modern surgery, and especially by the brilliant results achieved by Halsted in this special field.

In the hand of a skillful surgeon extirpation of the larynx is not the ghastly operation that we have been taught to regard it in the past, while its dangers are largely, if not wholly, preventable. Excision of the larynx and the removal of the neck lymphatics is one of the simplest and easiest dissections of major surgery, and the chief danger accompanying the former, septic pneumonia, may be perfectly done away with by low tracheotomy and packing between the tube and upper wound. The chief danger is not from the operation, but from recurrence in the neck lymphatics.

While total extirpation of the organ with the neighboring area of possible lymphatic infection should be the general rule of practice, are there exceptional cases in which a less radical method of procedure is justifiable? Early cases, in which the growth is very small (as, for example, the small papillomatous and polypoid growths sometimes found on the cords), distinctly circumscribed,

remote from the middle line and not of a specially malignant type, may possibly be removed with safety by extirpation of half the larynx and the lymphatics of the corresponding side. Even here success may be due to the fact that, while the growth may be pathologically malignant, it may yet be clinically benign. For example, on other mucous membranes of the body (lips, mouth, bladder, etc.) and on the skin we find such neoplasms in which the microscope shows an epitheliomatous structure in the main body or superficial portion of the growth, but no malignant changes in base or pedicle. It is quite probable that such a condition exists in the larynx. But even in removal of half the larynx and neck lymphatics we can never be perfectly sure that we have removed the entire disease, while it is open to doubt whether the preservation of function which may be secured thereby is sufficient to warrant the risk. Partial preservation of function should never be attempted in the presence of the slightest danger to life.

Operations for laryngeal cancer through the mouth, done almost universally to-day, it seems to me, should no longer come within the range of serious consideration.

Thyreotomy with curettement or removal of all apparent (visible) disease is not up-to-date surgery, is in direct defiance of the rules that should govern us in the treatment of cancer, and is a reversion to and a resurrection of a method of procedure that was discredited and abandoned over half a century ago.

Whatever operation is done, it should be forever borne in mind that we are dealing with cancer—with an infectious process—that, no matter how minute the original point of infection may be, the area of possible poisoning is practically boundless, and that, if the slightest doubt exists as to the circumscription of the growth or its character, the complete operation should be done. No operation for laryngeal cancer is complete without the removal of the neck lymphatics. It is chiefly because they have not been complete that excision of half the larynx or of the whole organ have so signally failed in the past.

The history of the treatment of laryngeal cancer is

the same old wretched story of the treatment of cancer in other organs—the long and melancholy record of dismal failure after failure—the inevitable result of only partially removing the disease. What is the present status of the subject? So far as operative measures are concerned, there seems to be utter paralysis of effort—on every side we are confronted by practical failure. Without stopping to inquire how far apparent success in partial removal of laryngeal cancer may be due to mistakes in diagnosis or to the simple accident of good fortune, it is safe to say that in the present state of our knowledge the outlook is extremely unsatisfactory and sombre. In the presence of the great uncertainty that surrounds operations for partial removal, and in the light of our experience in the modern treatment of cancer in other organs of the body, shall we resort to complete extirpation of the larynx with the neighboring area of possible lymphatic infection, or shall we cling with fatuous persistency to what some one has called, with cruel felicity of expression, the "incomplete operation," under which term must be included all surgical procedures hitherto resorted to in this disease?

The time will surely come, if it has not already come, when the conscientious surgeon will consider that he has fallen far short of his duty to his patient and to himself if he does not, in the treatment of cancer of the larynx, remove not only the entire organ, but also the neighboring lymphatic area. Then, and not until then, shall we have more favorable statistics and prognosis in cancer of the larynx. Then, and not until then, will the medical historian chronicle a real advance in the management of this terrible disorder.

Paper.

A CONSIDERATION OF THE STATISTICS OF THE OPERATIONS FOR THE RELIEF OF MALIGNANT DISEASE OF THE LARYNX.

By D. BRYSON DELAVAN, M. D.

Ever since the historical case of 1888, of tragic memory, earnest efforts have been made in many different quarters to establish reliable and successful methods for the surgical management of malignant disease of the larynx.

Patients have been operated upon in various stages of the development of the growth, several different methods of procedure have been employed, and valuable improvements in surgical technique and in the care of the patient have been suggested. The work has been done by operators of accredited skill and experience in the field of general surgery; by highly expert and competent specialists; and, thirdly, by any one in general whose ambition prompted the attempt. Since 1873, when Watson published the history of the first laryngectomy, several hundred cases have been recorded in surgical literature. In how many instances the records of cases have not been published it is, of course, impossible to say. It is fair to infer that operations supposed to have resulted with any fair measure of so-called success have found their way into print. The unsuccessful cases, on the other hand, have often been passed over in silence. The number of operators who have placed on record all of their cases, good and bad alike, is, unfortunately, very small. Several attempts have been made to collect the known cases and to draw from them such conclusions as their study might permit. Among the best of these have been the articles of Powers, Schmiegelow, Sendziak, and Wassermann. It is no lack of courtesy to say that none of them has been satisfactory, owing to the imperfect material with which each has had to deal.

Being aware of the ability of these gentlemen, and knowing their unusual opportunities for the study of the subject, as well as the painstaking character of their work, the writer has approached the preparation of this paper with due respect, not only for its importance, but for the difficulties which have been made apparent by the experience of others as well as by his own long-continued observations. Two facts have constantly forced themselves upon him: first, that the statistical material at his command was identical with that repeatedly and unsatisfactorily used by others, and, secondly, that if any real advance was to be accomplished, it must be made largely in the future, through the aid of scientifically complete reports *of all cases operated upon.* These two propositions have been vigorously advanced by him for so long a time and upon so many different occasions that he felt it most desirable that the present work be done in such a manner as to remove from it every possibility of prejudice or of personal bias. He accordingly secured the services of the best known and most expert professional medical statistician in New York, who made an exhaustive study of the material, including all of the best articles, brochures and works upon the subjects, and a large number of isolated cases from many different fields of surgical literature.

The report is made purely upon the merits of the material used, upon mathematical principles, and by one who, not especially interested in the subject, has no personal opinions to formulate nor theories to prove. Its fairness is self-evident; its deductions, unfortunately, the same that have been forced upon every intelligent student of the subject. They may be summed up, briefly, in the following sweeping statement, namely: there are no reliable statistics of operations for the surgical relief of malignant disease of the larynx. Nor can there be any, possessed of definite value or of conclusive weight, until a sufficient number of operators, of accredited standing in the surgical world, have been willing faithfully and fully to report in all of its details every case which they have had. While the failure to report unfavorable cases is the

most serious difficulty met with, there are several other evils which stand in the way of the investigator and which have been recognized by all who have studied the subject.

My collaborator says of them: "With regard to all statistics thus far published, they are not only too promiscuous, *i. e.*, representing an aggregation of isolated cases, with a tendency to the suppression of unfavorable results, but they are further untrustworthy by reason of confusion of cases, with resulting repetition, which tends to invalidate percentages. Thus Schmiegelow reports a considerable series of personal cases, but since he usually had a surgeon operate for him (Iverson, Studgaard, Sax-

TABLE 1.

Author.	I. Total Laryngectomy.	II. Partial Laryngectomy.	III. Thyreotomy.	IV. Endolaryngeal operation.	V. Subhyoid pharyngotomy.	VI. Lateral pharyngotomy.	Total.
Bergmann	20	19	9	0	0	0	48
Kocher	7	6	7	0	1	0	21
Miculicz	2	2	8	0	0	1	13
Butlin	0	4	10	0	1	0	15
Fischer	3	7	0	0	0	0	10
Chiari	1	12	5	1	1	1	21
Schmiegelow	1	3	7	1	0	0	12
Semon	0	4	8	0	1	0	13
Fraenkel (and Scheinmann)	0	0	0	10	0	0	10
	34	57	54	12	4	2	163

torph), the latter also gets credit for the case in some other statistics. Chiari's cases were operated on by Billroth, von Hacker and others, and in general this source of confusion is common. Again, the principal and assistants are often associated with the same case. Thus one of B. Fränkel's cases was also reported independently by his assistant, Scheinmann, and this source of confusion is common. Another source of error is found in the fact that the same patient often undergoes first an endolaryngeal operation, and later a thyreotomy or total extirpation of larynx. In this way numerous unsuccessful cases of endolaryngeal operation do not get into sta-

tistics, which contain the absurdly low number of thirty or thereabouts, although the number of isolated cases

TABLE 2.

CLASS No. I.—TOTAL EXTIRPATION.

OPERATOR.	Total cases.	Male.	Female.	Age.	Died from operation.	Survived operation.	Lived six months.	Lived one year.	Lived two years.	Well at over two years.	Died: pneumonia.	Died: recurrence.	Died: sepsis.	Died: exhaustion.	Died: accident.	Best record as to time.
v. Bergmann	20	17	3	57½	6	14	9	5	3	3	5	5	2	1	2	6½, 3, 2½ years.
Kocher	17	12	0	57½	1	6	5	2	1	0	1	4	0	1	0	
Mieuliez	2	2	0	47½	0	2	1	0	0	0	0	2	0	0	0	
Fiseher	3	1	1	54	1	1	0	0	0	0	0	1	0	1	0	
Chiari	1	0	1	62	1	0	0	0	0	0	1	0	0	0	0	
Schmiegelow	1	1	0	51	0	1	0	0	0	0	0	0	0	0	1	
Total	31	30	4	329.	9	25	15	7	4	3	7	12	2	5	4	
Percentage		88.2	11.7	54.9	26.7	73.5	44.	20.6	11.75	8.8	20.6	35.	5.88	14.7	5.88	Average 4 yrs.

CLASS No. II.—PARTIAL EXTIRPATION.

v. Bergmann	19	19	0	54	5	14	12	6	5	4	5	8	0	0	1	11½, 8½, 5½ years.
Koeher	6	6	0	48	1	5	3	2	1	1	1	1	.....	.....	1	2½
Mieuliez	2	2	0	53½	0	2	2	0	0	0	0	2	0	0	0	
Butlin	3	2	1	49½	0	3	2	2	2	1	0	2	0	0	0	5¼
Fiseher	7	6	1	58	3	4	4	2	1	2	1	2	.....	.....	.....	6.4
Chiari	12	11	1	48½	4	6	3	2	1	1	1	4	1	1	1	2
Schmiegelow	3	2	1	59½	0	3	2	1	0	0	0	3	0	0	0	
Semon	4	4	0	52½	2	2	1	1	0	1	1	1	.....	.....	1	6½
Total	56	52	4	52.9	15	38*	30	15	12	10	8	21	1	1	4	
Percentage		73.	7.4	52.9	26.8	69.8	53.5	26.8	21.4	18.	11.2	37.5	1.78	1.78	7.4	Average, 5¾ yrs.

*Result in two cases not reported.

actually reported is considerably larger. A fourth source of error is the fact that there is no well-defined

line of demarcation between the various forms of operation, such as thyreotomy with excision, etc., and partial resection. Different authors use different criteria. Some standard ought to be agreed upon."

In view of the writer's own experience in this matter, and of the findings of his collaborator, expressed above, it appeared to be wiser to disregard former statistics in this article and to follow some plan by which the numerous sources of error might be avoided. The personal cases have therefore been collected of extensive operators of the highest standing, who appear to have reported all of their material, good and bad. Taking all who have reported ten or more cases, we have the summary (shown in Table 1), the figures in which refer to patients, and not to individual operations.

By taking the cases of these men after a given period, say 1890, it ought to be readily determined whether or not the chances of particular forms of intervention are improving.

A careful analysis of all the cases of these nine authorities, each fairly representing the best work of the time, is given in statistical tables 2 and 3.

Classes No. IV, V, and VI of Table No. 3 are too meagre and incomplete to be of any value, and are only given as representing all of the work in this field of those furnishing the rest of the statistical material.

Having obtained the figures represented in Tables 2 and 3, it will be interesting to compare them with those given in the latest article made with similar intent (Chiari, 1898).

In studying Chiari's table No. I it appears that the figures of Schmiegelow show far the best results. Here again the fallacy of statistics becomes evident. Schmiegelow's fifty cases, operated upon between 1890 and 1897, do not begin to include *all* of the total extirpations done during that period, even by the surgeons whom he quotes, but *only such as were published.* Failures which were within the personal knowledge of the writer, not to mention the far larger number of which he could not have been aware, were constantly occurring and in the aggre-

gate were numerous. Without the addition of these the statistics must necessarily be absolutely unreliable.

TABLE 3.

OPERATOR.	Total cases.	Male.	Female.	Age.	Died from operation.	Survived operation.	Lived six months.	Lived one year.	Lived two years.	Well at over two years.	Died: pneumonia.	Died: recurrence.	Died: sepsis.	Died: exhaustion.	Died: accident.	Best record as to time.
CLASS No. III.—THYREOTOMY.																
v. Bergmann	9	8	1	54	3	5	4	4	3	2	3	2	0	0	0	$7\frac{1}{2}$, $4\frac{1}{2}$ years.
Kocher	6	6	0	48½	1	5	5	0	3	3	0	1	0	0	0	3 "
Mieulicz	8	6	2	54½	1	6	5	4	3	3	1	1	0	0	0	8, 5, 2½ "
Butlin	10	8	2	53	2	8	6	5	3	2	1	3	1	0	0	$5\frac{1}{2}$, 3, 4 "
Chiari	5	5	0	49	1	4	4	4	3	4	0	0	0	0	0	8, 3 "
Schmiegelow	4	4	0	58½	0	4	2	0	3	0	4	2	0	0	0	
Semon	8	8	0	55½	1	7	6	6	2	2	.....	.....	.....	.....	.....	6, 3 "
Total	50	45	5	52½	9*	39	32	23	18	16	6	9	1	.....	.....	
Percentage		90.	10.	52.5	18.	78.	64.	46.	30.	32.	12.	18.	2.	.....	.....	Average, 5 yrs.
CLASS No. IV.—ENDOLARYNGEAL.																
					Diagnosis of tumor not given.											
Chiari	1				Result not reported.											
Schmiegelow	1															
Fraenkel	9	8	1	58½	0	8	7	5	4	3	.....	.....	.....	.....	.....	16, 10, 4 years.
CLASS No. V.—SUBHYOID PHARYNGOTOMY.																
Butlin	1	1	0	59	1	.....	.....	.....	Mania; death 9th day.							
Kocher	1	1	0	46	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	4½ years.
CLASS No. VI.—LATERAL PHARYNGOTOMY.																
Chiari	1	1	0	61	1	0	.....	.....	.....	.....	.....	.....	1	.....	.....	
Mieulicz	1	1	0	63	0	1	1	1	.....	.....	.....	1	.....	.....	.....	

*Result in two cases not reported.

Schmiegelow is right, however, to have based his figures upon work done since 1890, a period in which great

advances in the technique of these operations have been made. For the same reason the writer's statistics are unsatisfactory, in that they include cases dating before

CHIARI'S TABLE, No. I.—TOTAL EXTIRPATION.

STATISTICIAN.	Death: in two weeks.	Death: in two months.	Recurrence.	Death: intercurrent dis'e.	Recovery: brief period.	Recovery: over three yrs.
Wassermann.	Combined % = 45.					
Before 1881, 41 cases...	22	3	11	2	..	3
After " 77 " ..	19	9	29	9	6	5
Total 118 " ..	41	12	40	11	6	8
Percentage.....	34.7	10.2	33.9	9.3	5.	6.8
*Sendziak.**	Total operative		61	.....	13	11
1873-1894, 188 cases....	deaths, 84 = 44.7%.		32.45%	.....	6.9%	5.85%
Schmiegelow.	Total operative		10	.....	24	5
1890-1897, 50 cases.....	deaths, 11 = 22%		20.%	.....	48.%	10.%
Delavan.						
Combined cases of six	Total operative		12	16	11	2
operators, 34.....	deaths, 9 = 26.5%.		35.3%	47.%	32.3%	6.%

*Insufficient observation in 24 cases.

CHIARI'S TABLE, No. II.—PARTIAL EXTIRPATION.

Wassermann.	Combined % = 44.					
Before 1881, 10 cases ..	3	1	4	..	2	
After " 40 "	11	7	8	1	10	3
Total 50 "	14	8	12	1	12	3
Percentage.....	28.	16.	24.	2.	24.	6.
Sendziak.†	Total operative		31	.....	13	10
876-1894, 110 cases...	deaths, 29 = 26.3%.		28.2%	.....	11.8%	9.%
Schmiegelow.	Total operative		18	.....	16	8
1890-1897, 50 cases.....	deaths, 8 = 16.%.		36.%	.....	32.%	16.%
Delavan.						
Combined cases of 8	Total operative		21	14	27	7
operators, 56.....	deaths, 15 = 26.8%.		39.%	25.%	43.5%	12.5%

†21 = 19% cases too incomplete for statistics.

CHIARI'S TABLE, No. III.—THYREOTOMY.

	Sendziak. 1876 1894.		*Schmiegelow.* 1890-1897.		*Delavan.* Seven op'rators	
	Cases.	%	Cases.	%	Cases.	%
Number of cases.....	92	.....	49	.....	50	
Death from operation....	9	9.8	7	14.3	9	18.
Relative recovery (no relapse for one year)	12	13.	21	42.6	23	46.
Definite recovery (no relapse after three years)	8	8.7	7	14.3	12	24.
Recurrence.....	49	53.3	14	28.5	9	18.

the above-mentioned period. Thus, in seven cases operated upon by von Bergmann between 1883 and 1889 the average duration of life was but nineteen weeks, and

the longest but eighteen months, while in thirteen cases operated upon after 1890 the average duration of life was sixty-four weeks, and several patients were still living and well at six and a half, three, two and a half and one year, respectively. On the other hand, it must constantly be remembered that these operations are being undertaken by an ever-increasing number of persons, the aggregate of whose failures would undoubtedly reduce the statistics of success to infinity, thus far more than neutralizing the advances of the best operators.

The other figures in table No. I are not discouraging when the nature of the statistics is remembered. Thus, disregarding Schmiegelow's too favorable conditions and results, it is found that in my own statistics deaths from operation have been reduced nearly one half. If the same material employed by myself had not been used in the statistics of Wassermann and Sendziak their death rates would obviously have been still higher.

The fact that the writer's percentage of recurrence is higher than the others may be accounted for by the fact that the cases used by him have been more carefully followed to the end. The most striking figures are those which show 32.3 per cent. of recoveries from operation, as compared with 5 and 6.9 per cent., respectively. These figures, together with those relating to death from operation, show conclusively that, in the performance of complete extirpation of the larynx, the greater the skill and experience of the operator the better will be his success.

It is strange that an axiom so simple as the above should be so often disregarded.

There is one class of laryngectomies not yet mentioned in this paper that have lately been attempted, namely, removal of the entire larynx together with the connecting tracheal lymph nodes. While this is in accordance with generally accepted surgical principles, the writer has yet to hear of a single case, either in this country or elsewhere, where the patient thus operated upon has recovered.

Table No. II shows less to encourage us than would have been expected, although the number of cases in

which life has been materially prolonged is considerable. The proportion of recurrence, however, is large.

Table No. III needs no comment. Its figures speak convincingly for themselves and are most encouraging.

From the foregoing it will appear that, with regard to major operations upon the larnyx, if justice is to be done to the merits of the operation and the highest degree of safety secured to the patient, three conditions must be fulfilled:

1. The work performed must be of the highest order of perfection.

2. All cases must be recorded in full, not only as to the result, but as to the details of the operation and of the after care.

3. Sufficient time must elapse between the operation and the final report in successful cases to give full credit to the method employed.

Five years ago the author wrote as follows: "I am strongly of the opinion that, for a time at least, both the welfare of patients operated upon as well as the interests of science demand that the indiscriminate performance of capital operations upon the larynx should cease.

"Let the most experienced and successful operators surround themselves with properly qualified assistants, let them systematize their efforts and use all diligence in the perfecting of appliances and methods and in the study of their cases, and let them keep careful and accurate record of everything pertaining to the history of the work." *These records at the proper time should be published in full.*

Then it will soon be learned whether the radical extirpation of laryngeal epithelioma is a justifiable procedure or whether, as seems possible, the practical necessities of these cases must be met by means less hazardous to the life and comfort of the patient, less destructive to important parts and more certain of complete and lasting success.

Paper.

THE SURGICAL TREATMENT OF LARYNGEAL CANCER.

By J. SOLIS-COHEN, M. D.,

Dr. Mackenzie in beginning his paper struck the keynote with reference to surgical procedures in carcinoma of the larynx, namely, the removal of the larynx and the infected lymphatic glands. The statistics given by Dr. Delavan confirm his opinion. Before any surgical procedure is to be undertaken, the surgeon should get the patient's consent for him to do whatever may be deemed necessary with respect to the case. Suppose you have a case in which you suspect carcinoma, and the infiltration is not diffuse but circumscribed, you should cut a piece of the growth out, as well as a section of healthy tissue, when practicable, with a punch forceps. I believe the proper procedure would be to make such a section, then examine the specimen under the microscope. If the parts are found to be healthy, you may await further developments. If not, some other procedures should be resorted to. If the growth affects the vocal band, a thyreotomy may be performed and a knife be employed to remove the circumscribed diseased area. I recall a case in which I did this operation in 1867. The patient lived twenty-five years and died of apoplexy. With regard to extirpation of one half of the larynx, I hardly think that is reliable. The only benefit to be derived would be that the patient would be able to speak perhaps a little better than he would without any larynx. This question must be decided after a careful examination of the parts *in situ*. If the growth approaches anywhere near the median line there is no doubt of the propriety of total laryngectomy. I have seen cases where the growth did not look larger than a small pea, but when the larynx was opened and the parts removed we found the concealed portion of the tumor four or five times larger.

Supposing you are going to perform a laryngectomy,

what is the procedure to be adopted? In the first place, one of the great dangers after operation, supposing that the patient survives it, would be from an accumulation of septic material in the lungs, and the patient might die of septic pneumonia. This is to be prevented, not by tamponing the trachea, but by operating with the patient in the semi-inverted position, having the head lower than the shoulders. In this way the blood will not run up hill; much of it will run out of the mouth and of the nose, although a certain amount of blood will be aspirated in the efforts at coughing, etc. Rubber tampons are not reliable. Sponge tampons sometimes allow trickling into the valves. There is no way by which we can absolutely insure the patient from the access of any bloody material into the lung tissue. The best plan is to operate in what is called the Trendelenburg, or in the Rose position, with the head over the side of the table.

A question which comes up, and which is an important one, in performing this operation, is whether or not it is better to do a preliminary tracheotomy. Surgeons are divided in this respect. Some think it is subjecting the patient to unnecessary peril to perform two operations. If a preliminary tracheotomy is not performed, there is danger of descent of the trachea into the mediastinum. This can be avoided by a preliminary tracheotomy. If you do this two weeks before the major operation is undertaken, the parts will become agglutinated and the trachea will be retained in a favorable position; otherwise there will be more or less strain on the sutures and you will have difficulty from the retrocession of the trachea.

Then, another question which comes up is whether or not the epiglottis shall be retained. Upon general principles it is best to retain it. There are successful cases on record in which the epiglottis has been retained because of its having showed no evidences of disease and has been no detriment to the patient. The majority of surgeons, however, believe that the epiglottis and everything should be removed. I know of successful cases in which the epiglottis has been allowed to remain, one of the patients liv-

ing subsequently at least eight years. In order to prevent septic pneumonia, it is well to shut off, if possible, all communication from the mouth to the air-passages. This can be done by suturing the upper portion of the trachea to the cutaneous wound, it being necessary to make a slit in the upper portion of the trachea. If you attempt to unite the severed trachea to the skin, in a circular condition, you will have a contraction that you would not otherwise have, and you will not have as good an opening. It is best to slit the upper portion of the trachea, take it to the side, fasten it to the skin, bring the other portion down, so in that way the patient is not inconvenienced by wearing a tracheotomy tube.

Another important point in the procedure is to avoid all dressings. If you pack the wound after the removal of the larynx, if the patient has the disposition to swallow, there is irritation of the constrictor muscles. It is unnecessary to put in an œsophageal tube into the larynx for the purpose of nutrition. You can nourish the patient for two or three days by enemata. The larynx should be removed from below upward; the lymphatic glands should be taken away, whether diseased or not, and in the after-treatment the foot of the bed should be elevated, so that during all treatment the patient shall be in the inclined position. The best results have followed this method.

The case I wish to refer to was operated upon in May or April of last year. Dr. Keen operated. I did not see the case at the time, but I saw the patient only a few days ago. The first attempt was to remove a portion of the larynx endolaryngeally, and afterwards a thyreotomy was performed for the removal of a small growth. There was subsequently a recurrence, and total laryngectomy was decided upon. This operation was done; the patient is well. He is a clergyman, sixty-five years of age.

The after-treatment of the patient requires the combined services of a surgical mind, and I am one of those who believe that every laryngologist should do as much as possible of his own surgery. I have always advocated it, and if he is in doubt as to his ability to do these opera-

tions, he should have by his side the proper assistance and do the operation on general surgical principles. At all events, he should not allow all his surgical cases to go to the surgeons.

Discussion.

Dr. SWAIN: In view of the rather non-encouraging statistics which Dr. Delavan has given us, I think we ought to look upon the brighter side of the subject, if there is one to be presented, and I wish to relate a little experience we had in New Haven some years ago, which I took the liberty of reporting before the association at its Washington meeting. It is possible to do a complete and thorough laryngectomy by a combination of the Solis-Cohen and Kocher methods, and you can have the patient perfectly comfortable from the start. He will be able to swallow without the gushing of the fluids through the opening, as used to be the case in the old days when an artificial larynx was worn. Although the vocal sounds produced in this case were more or less guttural, they were sufficiently distinct for the patient to make himself understood, as in the case Dr. Solis-Cohen showed years ago. A preliminary tracheotomy was performed. The glands in the neck were noticeably involved, and there was a good deal of turgescence about the larynx. I think it best to do a preliminary tracheotomy in these cases, as you can give much comfort to the patient in the way of keeping the trachea in place. The preliminary tracheotomy, by relieving congestion around the larynx and in the neck, caused the disappearance of the glands, so that we were unable to find all of them at the operation. The patient recovered. The operation was done after the manner suggested by Dr. Solis-Cohen's case. The epiglottis was stitched to the upper end of the œsophagus, so that all connection between the throat and the wound was closed off. The wound in the neck was sewed up and united by first intention. During the process of healing there was a little dragging down of the trachea. Twelve hours after the operation the patient was able to swallow sterilized fluids. We kept up rectal alimentation for two days, then the patient swallowed sterilized fluids and other nourishment without the introduction of an œsophageal tube. This is a great advantage over the old method of operating, and I think this feature cannot be too strongly emphasized in discussing the surgery of the larynx. If in this case we had

succeeded in getting at the glands that we had lost sight of, we should have saved the patient's life. The patient lived for a year and a half, and then died of recurrence of the disease in the neck, due to our having left the mass of glands of which I have spoken. The patient succumbed finally to inanition or general cachexia.

Since that patient was operated upon, I have had more confidence in advising a patient, if he has any trouble with the larynx of a malignant nature, to have it removed by radical methods. If the disease is limited, we might at least try endolaryngeal methods, but in other cases we should advise nothing less than complete laryngectomy, for in this way the patient can both be made comfortable and be absolutely rid of the disease.

Dr. C. C. Rice, of New York: Dr. Mackenzie has properly called our attention to the vital matter of early diagnosis of cancer of the larynx and the necessity for a radical operation for its removal. .There is another phase of the subject just as important, and one which involves great responsibility, and that is, that the laryngologist, who is the final arbiter as to the condition of the larynx, should not turn over his cases for extirpation of the larynx to the general surgeon until he is absolutely sure of his diagnosis. This is a very important phase of the subject. I believe there are laryngologists who are inclined to operate too early, who are inclined to consider almost any small swelling on the side of the larynx as cancerous, or, if not cancerous, as calling for the radical operation. When we hear the very discouraging statistics that have been submitted by Dr. Delavan, and know the discomforts of these patients after operation, it seems to me that we should move cautiously before concluding that the case is one demanding extirpation. I am positive that there are many cases which cannot be diagnosticated accurately with the laryngeal mirror, which cannot even be diagnosticated by carefully studying the history of the patient, and time only will decide as to the necessity of a radical operation in such cases. I could mention, as all of you can, numerous cases of small interarytænoid swellings, not tuberculous in character, which, so far as we could conclude after carefully studying the cases, were not syphilitic, and which perhaps might have been turned over to general surgeons for total extirpation of the larynx. The general surgeon is ready to perform this operation when we ask him. He does not know from the general appearance of the case as to whether it demands partial or total extirpation of the larynx. There

are many patients whom we should hesitate to condemn as cancerous until we have obtained further data on the subject. The patient should be put under a course of iodide of potassium, a careful study of the progress of his case should be made, and the question of whether the lymphatics had become involved or not, decided. All these things should be considered, and the patient should be saved the annoyance of this tremendous operation until we are absolutely sure of our ground.

Dr. MAYER: It would be well to discuss the question raised here as to whether the laryngologist ought to attempt the complete removal of the larynx by himself unless he is a general surgeon. It has been my experience during the past three years to have seen four cases of comparatively small growths within the larynx that seemed to warrant removal. In fact, in one instance the growth was so large that a tracheotomy was hastily done. The patient, a woman, came to me from Nova Scotia and she wore a tube at the time. A diagnosis of epithelioma was made, an operation was advised, and she was taken to the Presbyterian Hospital, in New York. The operation was begun, and it was found that there was a large mass both above and below in the trachea coming from the œsophagus, so that the surgeon decided not to proceed any further with the operation. I recall two other cases in which the disease in the larynx was only sufficient to show that a pathological condition existed there, but it had its origin in the œsophagus.

What shall we do in regard to papilloma? This is an important question. I have had a peculiar opportunity lately of observing the case of a man with a growth upon the vocal cord. The growth had all the appearances of the ordinary papilloma. Attempts at its removal were made, and I succeeded in removing piecemeal various sections of what was considered to be a papilloma clinically and from pathologists' report. The patient passed from my hands, ostensibly to go South, but I afterward learned that he had placed himself under the care of a practitioner who made irritating applications to the larynx. In less than three weeks' time he again presented himself, this time with a large growth situated below the arytænoids. It will be interesting to note the outcome of this case. It looks, to my mind, as if the original growth was not papillomatous, but cancerous, and the extension of the disease was hastened perhaps by the manipulations that were made to remove it. It is because of the uncertainty in regard to these cases that a

discussion of this kind becomes important, in order that we may decide as to how far we should go with our endolaryngeal method before proceeding to complete extirpation, with its annoyance and chances of recurrence, of which we have heard to-day.

Dr. A. B. THRASHER, of Cincinnati: Notwithstanding the very positive remarks of Dr. Mackenzie, in whom I have the utmost confidence, I should hesitate to lay aside all the benefits which would accrue to me and to my patients from a careful microscopical examination of a small endolaryngeal growth. It seems to me that the harmful results of the removal of a small portion of the growth by a sharp-cutting forceps are not sufficient to justify me in delaying the accurate determination of the character of this growth for a long enough time to be certain what it is by a macroscopical examination of the specimen. Whether that will be the case in the future, I do not know.

In my heretofore observed methods of operation it has been my custom, if I could do it without any apparent danger or without much irritation of the larynx, to cut off a portion of the growth and give it to a microscopist for examination. I find the microscope of great assistance to me in the diagnosis of these growths, and I am governed largely by it in my subsequent treatment of the case.

Dr. W. K. SIMPSON, of New York: I take somewhat the stand that Dr. Thrasher does in reference to the use of the microscope. I think it would be a very unwise thing, unless a laryngeal cancer was very evident, to have no microscopical examination made. If any operation is advised at all, it would be unwise to extirpate the larynx without having made a microscopical examination. I do not think any one is able to make a positive clinical diagnosis of malignant disease of the larynx in its incipiency. I am firmly convinced that where we can see these cases of laryngeal neoplasms early, whether the growths are benign or malignant from their appearance, it is our duty then and there to remove the neoplasm by endolaryngeal methods. Malignant growths do exist that may be removed perfectly by endolaryngeal methods.

I recall one case which I reported before the Laryngological Section of the New York Academy of Medicine, a report of which has just been published. In this case the tumor had all the appearances of a papilloma. It was of a distinct, pearly white color, which is very suspicious of malignancy. I removed it thoroughly, as I

thought, and had it examined, and the report was that it was a papilloma. It recurred very rapidly, indeed. I operated again and removed the diseased tissues more deeply than during the first operation, and one of our best pathologists reported that it was in all probability an epithelioma. It grew slightly again, and I again removed it and cauterized it deeply, and now, after a period of four years, there has been no recurrence of the growth whatever. I do not know just what would have happened if that case had been allowed to progress without intervention. If I had seen the case six months or a year afterward, when the disease was more fully developed, and the tumor had been removed by any of the methods mentioned, I believe the patient would have died. I think we had better resort to endolaryngeal operations at the present time in all cases where there is a small and isolated growth, because we have the advantage of the use of cocaine and of the suprarenal extract. These two things allow us to go to the very spot, without injuring the other tissues. I believe with Dr. Cohen in the use of the deep-cutting forceps, so that we can get well under the growth.

Unfortunately, I have been associated with several cases of laryngeal carcinoma, and the patients have all died. I have made the diagnosis; expert surgeons have done the operations, and they have terminated fatally. Considering my experience, I have almost come to the conclusion never to advise extirpation of the larynx. There is something in extirpation of the larynx which has a halo of fatality about it. I do not think the average laryngologist is capable of performing a laryngectomy. We have not the surgical manipulation, we have not the aseptic habit, nor the everyday training of a general surgeon. I believe the larynx should be removed only by a competent general surgeon under the best aseptic principles. We can guide him; we can associate ourselves with him. The after-treatment is of the most important consideration.

I had a sad experience in a case only a few months ago. A man, robust, healthy, sixty years of age, had a well-marked isolated carcinoma of the right vocal cord. I did not think the growth could be removed by the endolaryngeal method without several bites of the forceps. The patient was operated on by an expert surgeon, and the tumor was extirpated by means of a laryngeal fissure. The man died in five days, of septic pneumonia. He would have lived a year easily if nothing had been done.

So it has been my experience in all cases that I have had anything to do with, that where extirpation of the larynx has been undertaken, the patients have died, and I am getting opposed to it.

Dr. J. P. Clark, of Boston: In connection with the discussion on these papers, I wish to report the condition of a patient whose case I reported two years ago. The patient was operated on three years ago last January for carcinoma of one vocal cord. Just before coming to this meeting I wrote the patient and received a letter from him in reply stating that he never felt better in his life, and that he had a reasonably good voice. In his case thyreotomy was done, with the removal of the soft tissues on the affected side of the larynx, as well as a portion of the soft tissues on the other side. I suppose the ventricular band on the unaffected side still remains, and its apposition to the other side of the larynx cavity produces the voice.

Dr. Mackenzie: Of course, I expected more or less opposition to the views advanced in my paper. I should like to furnish Dr. Delavan with my statistics of complete extirpation of the larynx. They consist of three dismal failures. I will never do the operation again without the removal of the neck lymphatics. Unless we remove the lymphatics of the neck, we might as well not operate at all. There is no greater liar than statistics, and the paper of Dr. Delavan has shown how absolutely chaotic and crude they are in some cases. I do not believe that in ten years from now you will find a first-class surgeon who will consent to partial removal of the larynx. I believe that in ten years from now you will find laryngeal surgeons who remove cancerous growths through the mouth will be laughed at. The fight is now on, the same old fight we have had in the case of cancer in other organs. I do not see how it is possible to remove a cancer by the endolaryngeal method. You cannot be sure that you have perfect control of the disease. You are confronted with uncertainty. If you do not remove the entire disease, your patient is liable to die of auto-infection, and practically it is almost murder.

I should be guided by the presence of infiltration as to the extent of the operation I should do. After infiltration has occurred from a minute growth, we know that there is immediate danger of infection of the organ elsewhere. It becomes a serious matter after infiltration has taken place whether we accomplish any good at all except by the complete operation.

In regard to septic poisoning after these operations, we have had no trouble of the kind at the Johns Hopkins Hospital. They have made two incisions, one in which they place the tracheotomy tube, and one slightly above it in which they place the sponge. They have done many of these operations with the patients in the Rose position, and I do not think they have had a case of septic pneumonia.

In regard to the question of preliminary tracheotomy, we have found that it does not increase the chances of the patient for recovery. It is open to the objection that it subjects the patient to two operations, and a vital objection to it is that it renders an aseptic second operation absolutely impossible. In the presence of a suppurating wound it is impossible to have an aseptic field of operation.

With reference to the descent of the trachea into the wound, we have not had any trouble from that accident so far as I know. The epiglottis has been frequently retained in operations on the larynx, without any serious result. The patients after total extirpation of the larynx have swallowed fluids through an œsophageal tube as a simple matter of routine. The great danger of operating through the mouth, as Dr. Solis-Cohen suggests, and as I fully explained in my remarks, is that of auto-infection.

I fully agree with Dr. Rice and with Dr. Mayer that the general surgeons should do operations of this kind, because they are the men who are in constant touch with this work. These operations should be undertaken by men who are accustomed to doing major surgical work every day.

In regard to those cases which have been referred to by several of the members as papilloma, we should not forget the fact that a great many cases of so-called cancer are simply papillomatous growths. Sometimes we find a growth with a large mass of epith. d cells in it, and the pathologist and operator immediately rush to the conclusion that it is epithelioma. A portion of the growth or section may by a microscopical examination be shown to be malignant, but the major portion of the growth is benign. The case reported by Dr. Mayer simply supports my contention as to cancer of the larynx.

I have already answered Dr. Thrasher's objection in the body of my remarks. The objection to a microscopical examination is that it subjects the patient to the danger of auto-infection; it stimulates the local growth of the cancer. I do not speak theoretically on this subject,

but from a long and sad experience in the treatment of this disease.

Dr. Simpson said that no one was able to make a positive diagnosis of malignant disease of the larynx in its incipiency. I cannot agree with him. In the cases reported by me in which the larynx was removed I made the diagnosis early without microscopical examination, and my object in insisting strongly on the naked-eye diagnosis method was to encourage and stimulate the members to do likewise. Dr. Simpson's patient died because the lymphatics of the neck were not removed. I do not think such an operation as he has described is justifiable in cancer of the larynx. Nothing short of extirpation is the most radical operative procedure which we should advise in cases of cancer of this organ.

Dr. Simpson: I should like to ask Dr. Mackenzie as to the statistics of the results of cases of operation for cancer of the larynx at the Johns Hopkins Hospital in which extirpation of the organ was resorted to.

Dr. Mackenzie: I have given them already in the first part of my remarks, namely, three dismal failures.

Dr. D. Bryson Delavan, of New York: Notwithstanding the numerous causes of disappointment in connection with these cases, successful results are by no means unique. I regret that I am not able to exhibit a patient operated upon at the Memorial Hospital, New York, for partial laryngectomy, who is alive and well and engaged in active business now, nearly four years after the operation. In studying this subject, three practical points have yet to be fully considered: 1. Whether, on the whole, operation is ever justifiable, in cancer of the larynx, or not. 2. What are the best methods for the removal of a part or the whole of the diseased larynx. 3. Who is the best qualified operator to deal with this disease. The general surgeon, accustomed to certain methods of surgical technique, has not always the best qualification for these special cases. Some of the most brilliant operative work in cases of laryngeal cancer has been done by members of our own specialty. Five years ago I indicated that, both for the welfare of the patient and in the interest of science, the indiscriminate performance of capital operations upon the larynx should cease. I did this because of the many instances in which inexperienced operators had tested their ability upon one or two cases, under unfavorable conditions as to personal experience and as to the means for successfully carrying out the after-treatment of the case. The records of the opera-

tion would amply sustain this view, while the number of failures which have not been put on record would add overwhelming force to its truthfulness.

In discussing the remarks of those who have already spoken, I cannot go so far as Dr. Mackenzie in condemning operative work. I have seen personally enough cases in which marked relief has been afforded by a successful operation to more than warrant the performance of it. I believe, too, that, even if the proportion of cases in which life has been extensively prolonged is small, nevertheless, such cases have existed and have well warranted the surgical efforts expended upon them. There is no doubt that the experienced observer can detect in most instances characteristic signs of malignant disease long before it has been demonstrated as such by the microscope. I heartily agree to the objection raised to the attempted removal of fragments of the growth for microscopical examination. Such examinations are proverbially unsatisfactory, while the damage to the diseased parts is positive and serious. It seems to have been practically demonstrated that partial resection of the larynx leaves the patient in far better condition than most operations for the total extirpation of the organ. Such, indeed, has been the result of my own observation in the case of many patients, operated upon both in this country and in England. Extensive operations for the removal of lymphoid glands, whether supposedly diseased or not, are theoretically correct. Practically, they increase the possibilities of surgical shock and infection, and by so much impair the patient's chances for immediate recovery.

The question of early tracheotomy, raised by Dr. Solis-Cohen, has always greatly interested me. I am more and more firmly convinced of the great practical value of his views upon this subject. While early tracheotomy is not advised by some of the ablest general surgeons of the day, it is certainly right in principle and, according to the best light of experience, correct in fact. The one valid argument urged against it, namely, the danger of infection, is unfair, for it is possible in most cases to open the trachea at a date so far in advance of the major operation as to admit of complete healing, and thus remove any risk of sepsis. Even if there were some slight danger of this kind, it would be far overbalanced by the great advantages which Dr. Solis-Cohen has so accurately and forcibly pointed out. Not only the fixation of the trachea to the sides of the wound, but the

education of both the trachea and lungs under the new conditions of breathing and the accommodating of the whole region, especially of the pneumogastric nerve, to the changed order of affairs are considerations too important to be lost sight of. I cannot help feeling that the recognition of the value of this suggestion would have saved several lives within the limits of my own personal experience.

It is discouraging to think that, with all the effort expended in the study of the relief of cancer of the larynx, not more advance has been made. As I have often before said, successful progress must depend, first, upon the scientific application of the best methods already known, by those best qualified to employ them in cases skillfully selected for operative work; secondly, upon careful records of all work so done, and, thirdly, upon the fact of all results, whether good or bad, being faithfully and honestly reported. Until some such system is carried out, we cannot arrive at any but unsatisfactory results, for such deductions as may be made will only tend to mystify, if not actually to mislead.

Dr. Solis-Cohen.—I wish to say, in connection with the technique in the case I described, that the patient was able to sit up on the fourth day. On the tenth day he was able to get up, and a little later he went to his home, a few hundred miles away. I usually insist upon taking out the larynx and the lymphatics. When a preliminary tracheotomy is done, the glands should be removed at that time.

Paper.

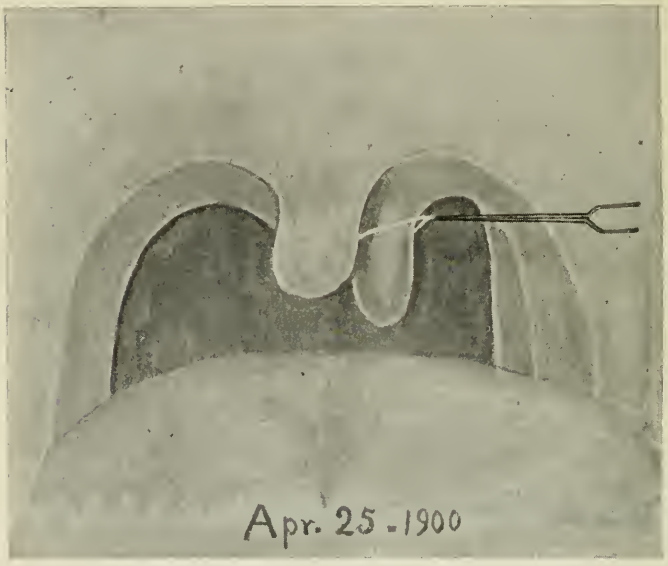
A CASE OF SUPERIMPOSED UVULA.

By THOMAS AMORY DEBLOIS, M. D.,

The case I have to report, of which I have no written copy, is one of superimposed secondary uvula, the two halves hanging one in front of the other. Of course, we see a great many where the halves hang side by side, but my case is different.

The patient, a young man, had a great deal of irritation of the throat, and I suggested that he might have an elongation of the uvula. On looking into his mouth, I found that the anterior pillar of the fauces was all right, and there seemed to be a perfectly formed uvula, but from the posterior pillar there hung a second uvula

almost masked by the first. I slipped a galvano-cautery loop over the posterior uvula and, drawing it tight, cut it off in about a second. As soon as I did so, the front



uvula fell right back into the median line. There was just a little white eschar on the posterior pillar, which on that side had an extra fold, as you observe, and you could not tell that any uvula had been removed, because it looked perfectly normal and natural. The uvula removed was muscular in consistence, having the same appearance as any piece of uvula. It had the muscular fibres.

I never have seen anything of the kind before, and I do not think very many of you have seen a case like it. I thought it was worth showing.

Paper.

SEVERE HÆMORRHAGE AFTER OPERATIONS ON THE THROAT AND NOSE; REPORT OF FIVE CASES.

By ARTHUR AMES BLISS, M. D.,

The five cases to be reported in this paper occurred within a period of about ten years. They may be of interest on account of certain characteristics belonging to each one, as well as serving for examples of the unexpected dangers and complications which are almost unavoidable conditions attending operative work in the nose and throat. The fields of operation lie within passages whose functions are of vital importance, whose calibre cannot be narrowed or closed, except for comparatively short periods, whose structure makes the operative fields difficult to approach and to keep within range of vision, and whose very rich blood supply comes from vessels remote from the seat of operation. The final distribution of these vessels, in the area involved, are in numerous small ramifications, anastomoses, and plexuses, that render the control of hæmorrhage a very different problem than is presented in the surgery of other tracts of the body.

We cannot, however, escape the necessity for operative work, with all the technical difficulties involved and the dangers attending its performance.

Case I.—The first case to be reported was one of sæptal displacement complicated by the existence of a ridge of exostosis along the upper margin of the vomer. In operating on this patient, now, I would do an Asch or a Watson operation. At that rather long-ago time, I did a Roberts crucial incision operation, and, after replacement of the curved cartilaginous sæptum, sawed away the projecting ledge of bone and cartilage, which extended well across the inferior meatus of the left nasal passage. Hæmorrhage was no more than is usual in such cases. To protect the wound caused by the saw, and to support the replaced cartilaginous sæptum, a pledget of iodoform gauze was fitted into the left nasal passage. This remained thoroughly aseptic and was re-

moved on the fourth day. Immediately following its removal, a severe hæmorrhage occurred from the wound caused by the Bosworth saw. Bleeding was profuse, and failed to stop after application of a dull-heated electrocautery point. It was controlled only by plugging the left nostril, and, in spite of the packing, oozing occurred at intervals for about two days.

The patient, a young, overworked theological student, was much weakened, and I kept him in the German Hospital for about ten days. This man had bled profusely from slight cuts during his boyhood, but could give me no clear history of hereditary hæmophilia in his family.

Case II.—This case was that of a robust-looking boy of two years of age. The faucial tonsils were greatly hypertrophied, their free surfaces being almost in contact in the median line. My intention was to excise both tonsils. I excised a large portion of the left tonsil, under general anæsthesia, using tonsil scissors and forceps for this work, as the lymphoid mass was too large to be included within the ring of an amygdalotome of the ordinary size. Another reason for avoiding the amygdalotome was the fact that the tonsils were adherent to the faucial pillars, and needed careful excision. The one closure of the scissors, which removed the main bulk of the left tonsil, was followed by a really very severe hæmorrhage, the blood gushing from the mouth in a manner that would indicate the cutting of a vessel of considerable size. I could find no one special point of bleeding, and it was an uncomfortably long time before I could arrest the flow. This was accomplished, at last, by grasping as much as I could of the entire cut surface in the jaws of a large hæmostat.

The hæmostat was left in place for about one hour and removed with considerable anxiety on my part. Fortunately, there was no recurrence of hæmorrhage. This child was left weak and anæmic, and required careful feeding and medication for two weeks before complete recovery. An uncle of this child, on the mother's side, had such severe hæmorrhages following very slight injuries that the diathesis of hæmophilia could be established in this family.

Case III.—This case was one of excision of hypertrophied faucial tonsils, the patient, a woman, thirty-one years of age. The operation was done with an amygdalotome (Mathieu's). Hæmorrhage commenced, very soon after excision, from the right tonsil. A good-sized stream of blood spurted from a point just behind the

anterior faucial pillar, about one-fourth of an inch below its junction with the soft palate, and streamed across the fauces. This bleeding point was easily grasped with a hæmostat, which was clamped upon it for about an hour. After removal of the hæmostat there was no recurrence of hæmorrhage.

Case IV.—The fourth patient was a young married lady who suffered from nasal occlusion and intranasal pressure in the nasal chamber of the left side. On the lower turbinate of this side was found a small papilloma. This dendritic growth, as well as the entire nasal mucosa, was unusually pale. The turbinates of both sides of the nose were of the doughy consistence, when felt with the probe, commonly noticed in cases of long-standing vasomotor paresis. As the little papilloma appeared to be a very trifling affair, I removed it with the cold snare, meaning to bind down the turgid mucous membrane of the turbinate from which it sprang, at a later visit, by means of an electrocautery incision. The patient returned to my office within half an hour after this little operation, pale and exhausted from a severe hæmorrhage from the surface occupied by the papilloma. Packing with borated gauze was the only effective means of stopping the bleeding, although the usual procedures were tried in turn. It was fully one week before this patient could be relieved from the annoyance of gauze packing, oozing occurring very soon after the removal of pressure. I could not obtain any history of hæmophilia in this lady's family. The patient had been through a long season of social and domestic engagements and cares, and was in a condition akin to neurasthenia. She seemed much improved in health after the unpleasant experience of the hæmorrhage, probably from the enforced rest and supporting treatment.

Case V.—My last case, and the only one with a fatal termination, occurred in February of this year. A child of seven years of age was brought to me at the German Hospital suffering with all the manifestations resulting from mouth-breathing. The boy was anæmic, of very fair skin and pale mucous membranes, but well nourished and with normal heart, lungs, and kidneys. There was a large nasopharyngeal adenoid mass which greatly blocked the nasopharyngeal space. The nasal sæptum was so badly deflected to the left that the portion above the anterior nasal spine, from the nasal floor upwards, was in contact with the margin of the nasal process of the superior maxilla of the left side. The nares were both very small. I knew that removal of the "adenoid"

alone would not give this child free nasal respiration. The parents were extremely anxious to have the condition relieved, and I felt that the feeble health of the child could readily be due to the nasal obstruction, pressure, and the resulting mouth-breathing. In this case, I failed to investigate regarding the possibility of hæmophilia, although, since the tonsil case, already reported, I had made this investigation a matter of routine in all cases presented for operation. After the operation had been performed on this boy, and we were in the midst of our trouble—soon to be told—the child's mother remarked in a casual sort of way, that if the little boy's older brother had been the patient, she would feel anxious about the hæmorrhage. It was then learned that the brother was a bleeder, having dangerous hæmorrhages from the slightest cuts, and that one cousin and one uncle on the mother's side were well-marked cases of hæmophilia. My patient had suffered from the not-uncommon swellings of the joints, called in his case rheumatism, and the extensive ecchymoses following contusions, observed in subjects of hæmophilia. He had never had any severe bleeding.

The operation in this boy's case was an Allen's supralabial resection operation for the displaced nasal sæptum, and an excision of the large nasopharyngeal "adenoid." The latter was removed by forceps, guided by the operator's finger. There is seldom any severe hæmorrhage attending the Allen operation, a very simple operation, quickly done and most effective. In this case it was no more than usual, while the bleeding from the "adenoid" excision stopped promptly at the completion of the operation. The child seemed to be in very good condition after the operative work. I believe, however, that, during the night, there was more or less steady oozing of blood, which the child swallowed. The first visible bleeding, however, was not seen until the following morning, when the child was given his breakfast. Light-colored blood then spurted in a rapid stream from the nose and nasopharynx and from the incision in the frenum of the upper lip. It was a hæmorrhage so severe as to alarm the experienced resident physician of the hospital.

This hæmorrhage was controlled only by packing with iodoform gauze and placing firm tampons in the posterior nares and nasopharynx. We were never able to free the parts from tampons, as oozing would begin and increase rapidly a very short time after removal. Ergot was given in large and continued doses, strychnine hypo-

dermically, and brandy. Transfusion of normal salt solution was tried. The child lived for four days after the operation, and looked completely exsanguined before his death. The temperature ranged from 104 to 106° F. during the last thirty-six hours. All bleeding seemed to be under control during the last two days of life, but the patient never rallied from the excessive loss of blood and shock caused thereby. The operation was performed on a Friday and the child died on the Tuesday following.

In two of the cases reported in this paper, hæmorrhage followed excision of the faucial tonsils. The blood supply of the tonsils is peculiarly rich. The tonsillar artery, from the facial, divides into numerous small branches at the base of the lymphoid mass. My experience is that it is seldom cut, unless a very complete excision, involving the entire tonsil, is performed. We rarely, if ever, have to do such excisions.

The ascending palatine artery comes also from the facial, and is distributed along the anterior face of the tonsil, the anterior faucial pillars, and the soft palate. I believe that this is the vessel which most frequently causes trouble.

Fortunately, the point of division is almost invariably within easy reach of a hæmostat, and I have found this simple instrument final in its action, when other means have been more difficult of application and have failed.

Dr. Dawbarn, of New York, describes a ligature, run through the tissues somewhat like a purse string, in general shape like a square, and looped at each corner. This is applied and pulled tight, but I fail to see how any one could stitch such a ligature around the bleeding surface, considering the circumstances attending a hæmorrhage from the tonsil. The tonsil pad, arranged to squeeze the bleeding mass between two points of pressure, the one on the tonsil, the other applied below the angle of the jaw, externally, seems to me less rapid of application, less sure in action, than the hæmostat, and quite as uncomfortable for the patient. The ascending pharyngeal artery from the external carotid is sometimes such a large vessel that its pulsations can be dis-

tinctly seen when inspecting the pharynx. It ascends in the posterolateral wall of the pharynx, well back of the posterior faucial pillar, and sends a branch to the tonsil. The internal maxillary also contributes to the tonsil's circulation by means of a branch from the descending palatine branch of this artery. If ligation must be resorted to, it would seem best to tie the external carotid. One of the cases reported was unquestionably a subject of hæmophilia, and one other case also probably had this diathesis. Several members of the American Laryngological Association have reported experiences with this class of patients. At a meeting of the laryngological and rhinological section of the New York Academy of Medicine, February 23, 1898, Dr. J. A. Kenefick reported a case of adenoid excision in a bleeder which terminated fatally. At this same meeting, Dr. Newcomb mentioned one fatal case of his own, from the same operation, and stated that he had had three cases of severe hæmorrhage. Dr. Newcomb stated that he had found about sixteen cases, in all, when investigating the subject of hæmophilia, one or two of which had proved fatal.

Dr. Delavan had reported a fatal case of his own, in a child four years of age, and three fatal cases in the practice of other surgeons. Dr. Wright reported two cases in young women, seventeen or eighteen years of age. Dr. Van der Poel reported two cases of severe hæmorrhage after adenoid excisions, but it is not stated that these cases were bleeders.

The clinical conditions associated with hæmophilia are now pretty generally known, although we are quite as ignorant of the cause as were the physicians of the Twelfth Century. We know that hæmophilia is transmitted from the mother to her male children, while the female children, free themselves from the habit, transmit it to their male children. We know that bleeders present frequently the condition of hæmarthrosis, mistaken at times for rheumatism; that ecchymoses and extensive extravasation of blood occur after slight bruises on the surface of the body; that strange, infrequent cases of effusion beneath the scalp, or, apparently, in the

cerebral ventricles, occur, causing cephalhæmatoma, giving the appearance, in young children, of hydrocephalus.

The pathology is in doubt, as the theories of thin vessel-walls, or of failure in the fibrino-plastic elements of the blood, are hypotheses, still requiring positive proof.

In looking over the literature of hæmophilia, one is struck by the great fatality attending surgical work upon bleeders. Dr. C. T. Dent, of London, believes that a mental peculiarity is common among subjects of hæmophilia which leads them to conceal, or to deny, their tendency to hæmorrhage. He cites one fatal case which would appear to support this idea, and he suggests that bleeders, as well as epileptics, should wear a medal or label hung about their necks setting forth their infirmity. Dr. Nash, of Bedford, England, has noticed the mental peculiarity mentioned by Dr. Dent, but favors a law which would compel bleeders to have the word "hæmophilia" or "bleeder" tattooed upon the skin, thus posting a notice of danger, so that all surgeons may be independent of the statements of the subjects themselves.

The whole question of hæmophilia is most interesting in itself, but would lead me far afield from the strict limits of my paper. I am convinced of one thing, however, from my own experience and that of many others, that all operative procedures in the range of the laryngologist's and aurist's work should be avoided entirely in all cases where a reasonably certain diagnosis of hæmophilia can be made from the family history, even though the tendency to bleed is not pronounced in the patient's personal history. This rule would apply with especial force to men, as experience shows that males are vastly more apt to manifest the bleeding tendency than females are. If there could be made any exception to this rule regarding operative work, it could be only in cases of extreme urgency and with a full understanding on the part of all concerned regarding the dangers attending the situation.

The accidents reported in the five cases, briefly outlined, all occurred in the course of operations performed, as a rule, without any such complications, and which are,

perhaps, among the most frequent procedures in the range of nasal and throat surgery. They indicate the possibilities of the unexpected, and suggest that all strictly surgical work within the area of the upper respiratory tract should be undertaken with every precaution safeguarding the patient. The only safe plan is to make a careful clinical study of each case presented, unless the patient has been under the care of the physician of the family. We should know the diatheses of our cases quite as thoroughly as the condition of the lungs, heart, and kidneys. With women and children, especially, as well as with mentally overworked men, we should take into account the whole physical situation of the subject, and see that hygienic, dietetic, and therapeutic measures are taken to prepare the case for operative work. In most instances such care will not be absolutely required, but the search for its requirement may effect a successful result instead of failure, or even disaster. This is a more complex problem than the mere discovery and correction of a local lesion. The man who will excise any and every variety of hypertrophied tonsils at the first meeting with his patient, or who will select this first opportunity to snare off posterior hypertrophies of the turbinated bodies, saw off sæptal exostoses, or remove nasopharyngeal "adenoids," is not a judicious operator, and will most surely get himself into trouble. I believe that the circumstances and physical conditions attending the surgery of the nose, throat and ear are technically more difficult to meet than are those of most of the so-called "big operations" on the larger areas of the body, and that they are attended with quite as many chances of danger. We obtain little credit for our successes, because every general surgeon believes that he can do such work quite as well as the laryngologist or aurist, but we need not expect consideration from any one if the results are other than good. Therefore, for the safety and interest of the patient, in the first place, and, of minor importance, for the surgeon's own peace of mind and satisfaction in good results, the reproach of over-caution need not be feared.

In every case presented where operative work, except of the simplest character, is required, a careful consideration is needed of all conditions associated with the patient and with the work to be done.

Paper.

REPORT OF TWO CASES OF DERMOID CYST OF THE NOSE.

By H. S. BIRKETT, M. D.,

The comparative rarity of the occurrence of dermoid cysts of the nose and the interest attached to tumors of this nature are my excuse for adding two more cases to the literature on this subject.

The first case, for which I am indebted to Dr. Cornell, of Brockville, Ont., concerns a young man, sixteen years of age, who consulted me three years ago on account of a "discharging sore" situated near the tip of the nose, in the middle line.

His father gave the following history concerning his son: At birth it was noticed that there was a small round lump, of about the size of a large pea, on the nose near the tip. This remained so, unaltered in size and shape, until August, 1896, when it burst and gave exit to a small quantity of thick, curdy-looking pus. The opening was enlarged and the lesion curetted elsewhere. The resulting wound soon closed and remained so for several weeks, when the lump made its reappearance and broke, and has continued to discharge ever since. Upon examination, there is noticed a small opening, circular in shape and about two millimetres wide, situated in the middle line of the nose and about five millimetres from the tip. A skiagram was made of the nose, with the object of ascertaining whether a sinus existed, as it seemed impossible to find it with a probe. The result was that the skiagram showed a fine dark line, leading from the centre of the opening directly upward and backward into the sæptum. The result of the skiagraphy is shown in the accompanying picture (Fig. 1, X). After a good deal of difficulty, a very fine probe was successfully passed into the sinus and took a direction as indicated in the skiagram (X). The sinus was opened and freely and thoroughly curetted, and solid nitrate of silver applied. The sinus itself was found to be lined with a dense

fibrous membrane, with sebaceous material covering its surface. At the distal end of the sinus and within it, several fine hairs were found close to the opening. The wound thus made was allowed to heal up thoroughly from the bottom, leaving a very wide cicatrix which is seen upon close examination of Fig. 2. This was subsequent-

Fig. 1.

ly dissected out, and the edges were freshened and united. The result, which was extremely satisfactory, is shown in Fig. 3.

The second case, for the history of which I am indebted to my house surgeon, Dr. R. J. Tooke, concerns a young boy, aged eight years, who, according to his parents' statements, has had a growth on his nose since birth, which, though small at the time, has recently slowly

increased until reaching its present size. Upon examination, a tumor, somewhat oval in shape, is noticed occupying the greater portion of the bridge of the nose. It extends from one-fourth of an inch above a line drawn horizontally from the eyebrow on the one side to that of the other, and continues downward for an inch, reaching to about the centre of the nose. At the upper portion it is broader and gradually narrows below, assuming thus

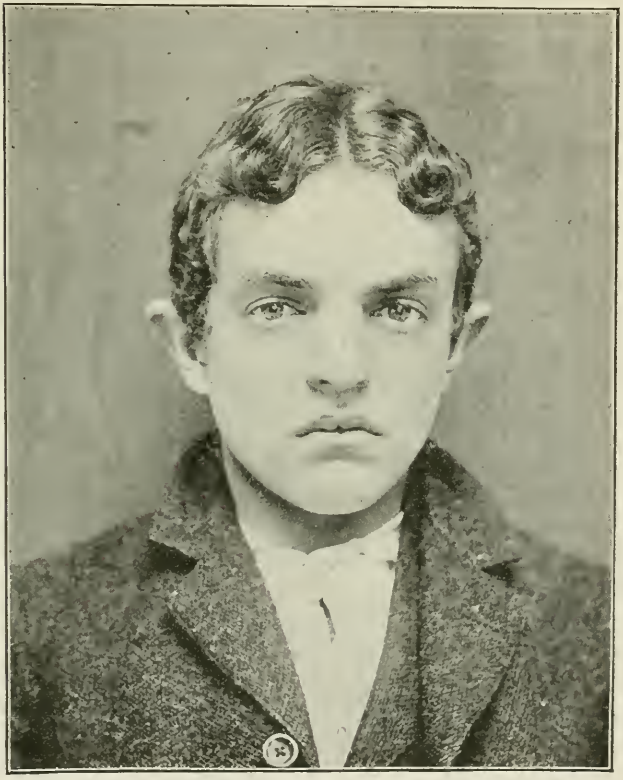


FIG. 2.

somewhat of a pear-shape, and at the lower point a few fine hairs are noticed. In length it measures an inch and a quarter, and in breadth, at the widest part, half an inch (see accompanying Figs. 4, 5, 6). These photographs show remarkably well the disposition of the tumor and its shape. The tumor is soft in consistence, semi-fluctuating, and has very limited movement over the underlying structures.

A skiagram shows no deep involvement and no separation of the nasal bones. As a result of the exposure to the X-rays, the tumor next day showed a slight diffuse redness, and distinct fluctuation was to be felt. The skin covering the cyst was incised vertically in the middle line from base to apex, and the wall carefully dissected out. The wound was closed in its entirety by horse-hair

Fig. 3.

sutures, except a very small part of the lower end of the incision, which was left open, and into this a small gauze drain was inserted. The object of this was that, in case of any discharge setting in, it should freely drain away without interfering with the primary union of the upper portion of the incision. This proved beneficial, as there was a slight purulent discharge for a few days, which gradually diminished, and in the course of three weeks the opening had completely closed, leaving a very imper-

ceptible scar. The result is seen in the accompanying photographs, Figs. 7 and 8.

The pathological report from the laboratory of the hospital is as follows: "Soft contents of a homogeneous-looking caseous material resembling mortar, microscopically of cellular débris, flat crystals, and fine, pale hairs. Cyst wall is largely of unstriped muscle, but contains a small amount of fibrous tissue and fat, with blood-vessels. Some free hæmorrhage."

Sutton makes the following remarks regarding the development of the nose in connection with dermoid cysts: "In the early embryo the rudiment of the nose is represented by that process of the primitive skull known as the frontonasal plate, and this is separated from the

Fig. 4. Fig. 5. Fig. 6.

lateral portions of the face by the orbitonasal fissures. The rounded angles of the frontonasal plate are known as the globular processes. Each process forms a portion of the ala of a nostril and the corresponding præmaxilla. These processes fuse in the middle line and give rise to the central medium piece (philtrum) of the upper lip. These dermoids are invariably situated in the line of the internasal fissure, and are in all probability due to incomplete fusion of the globular processes."

From old and recent literature which has been consulted, I have been able to find only six similar cases in addition to those under consideration. Ligorio (2) reports one; Lawrence (3) two; Bramann (4) three.

There are many recorded cases of dermoid recesses, but only the above-mentioned cases were instances of distinct tumors.

Stewart (5) reports a case of deformity of the nose which, from the history given, had its origin in a dermoid cyst, but its nature at the time of the first operation was not recognized.

Fig. 7.

Note.—Since writing the foregoing, I have had the good fortune to see a third case of dermoid cyst of the nose. This concerns a female child, nine months of age, who at birth presented a definite tumor of about the size of a small pea, situated in the middle line and near its tip. Owing to the parents' leaving at once for the sea-

side, it was impossible to get a photograph taken in time or to perform any operation, but this will be done on the child's return to town this fall.

References.

1. Sutton. Notes on Some Unusual Cases of Tumors. *Practitioner,* Vol. lix.

Fig. 8.

2. Ligorio. Un caso di ciste dermoide mediana del naso. *Clinica moderna,* Pisa, Vol. iv, 1898, page 251.

3. Lawrence. *London Medical Gazette,* 1837.

4. Bramann. *Deutsche medicinische Wochenschrift,* December 13, 1888.

5. Stewart. *Lancet,* March 27, 1897.

Paper.

ON THE EMPLOYMENT OF THE UPRIGHT POSITION IN ETHER OPERATIONS UPON THE NOSE, THROAT AND EAR.

By THOMAS R. FRENCH, M. D.,

A SEARCH through surgical literature reveals the existence of an almost universal fear among surgeons of performing ether operations upon the nose and throat

FIG. 1.

while the patient is in the upright position. This fear seems to be due to the supposed danger of blood flowing into the windpipe. My experience in a large number of operations with the patient in the upright position has

proved that unless the patient is profoundly anæsthetized, blood does not flow from the pharynx into the larynx. Even in deep narcosis, during the performance of operations above the larynx, I am of the opinion that the danger would never be great if anything like reasonable care were taken to prevent the blood from flowing over the arytænoid structures, for, when sharp hæmorrhage occurs, the blood can either be caused to drain out from the mouth or nose by tilting the head well forward, or be caught in sponges passed through the mouth to the posterior pharyngeal wall. It is alleged that disaster is courted when operations are performed in this position, and that if blood flows into the lower air-passages while the cough reflex is abolished, one has only himself to blame if either pneumonia or violent bronchitis occurs afterward. Theoretically, that seems a plausible statement, but, when confronted with the fact that in nearly a thousand operations performed with the patient in the upright position by my associate, Dr. Dudley, and myself neither such an accident, nor, indeed, any other serious accident, has happened, the objection would seem to be deprived of its weight. I believe that the advantages of the upright position, which are susceptible of demonstration, are so many and great that it is destined to become the accepted position in the future for ether operations upon the nose, nasopharynx and fauces. I do not regard it as wise to operate upon the larynx or trachea with the patient in the upright position, because the danger of blood flowing into the lower air-passages is, under such conditions, a real one.

I have used the upright position in ether operations for quite a number of years, utilizing ordinary chairs, found in the homes of patients or in the hospitals, for the purpose. As a result of that experience I have been enabled to devise an operating chair which has now been in use for about three months, and which seems to answer the purpose exceedingly well. The chair (Fig. 1) belongs to the class of furniture known as aseptic furniture, but, as in its construction, wherever possible, bicycle tubing is used instead of iron rods, the objection of undue

weight, usually associated with iron furniture, is entirely overcome. The side supports of the back of the chair are made to slide into the rear legs. This greatly simplifies the construction of the chair and permits the back to be shortened or lengthened with ease. It can be shortened sufficiently to fit the back of a child of eighteen months or lengthened to fit the longest back of an adult. The top

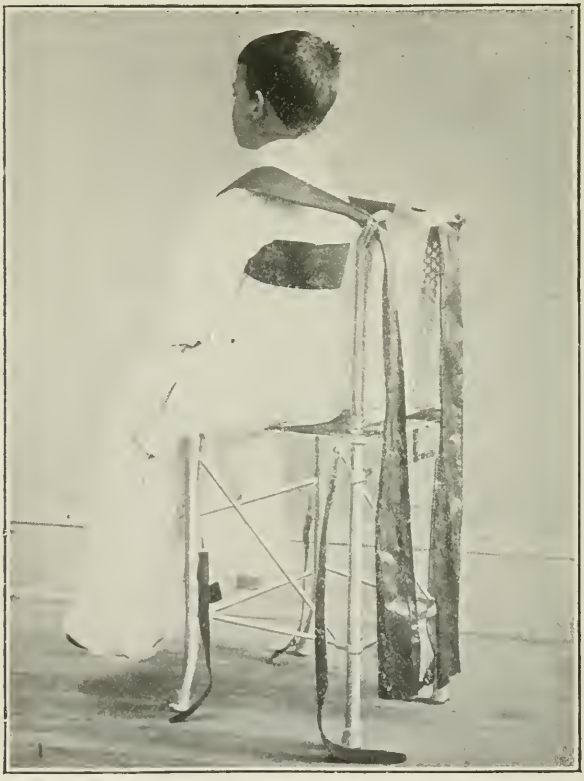


Fig. 2.

of the back is turned into a curved scroll to receive the head of the patient. On each side of the head-piece are two openings through which the bandage is passed which holds the patient to the chair. The back can be fixed firmly at any height by means of a clamp below the seat. The seat, which is covered with corrugated rubber to pre-

vent the patient from sliding forward, is short enough for a child, but long enough to accommodate an adult comfortably. It is of such a height that the operator, by sitting on a revolving stool before a child or standing before an adult, can bring his head opposite the head of the patient.

The method of placing a patient in and fastening him to the chair is as follows: After the anæsthetic has been administered in the horizontal position long enough to overcome in part the muscular rigidity, the patient is lifted upon the chair, which is tilted very far backward, and held in that position by an assistant. This brings the knees about on a level with the head, and the circulation is not disturbed. Before anæsthetizing, and before the body is wrapped in a blanket, a bandage of stout linen or canton flannel, four inches wide and twelve feet long, is passed across the back over the scapulæ, brought out under the axillæ, and turned up over the front of the shoulders (Fig. 2). After the patient is in the chair, in the extreme tilted position, the back of the chair is adjusted so that the head of the patient will fall into the rest at the top (Fig. 3). The shoulder straps are then passed through the openings on each side of the head rest, turned downward and caught under a hook on the back of the chair, then turned upward again and, after being caught over the upper end of one of the side posts, are tied together (Fig. 4). This draws the head and upper portion of the patient's body firmly to the back of the chair. Two broad leather straps, fastened to the back of the seat of the chair, one on each side, are then passed around the hips and abdomen and caught together with a clamp buckle. The legs below the knees are fastened with straps in a similar manner and the adjustment of the patient to the chair, which takes but a minute, is completed. The chair and patient are carried to the place of operation, the back of the chair is slowly raised, and by the time the upright position is reached the patient is sufficiently anæsthetized and is ready for operation.

It is very important that the chair should be raised to

the upright position slowly, for a sudden change from the prone to the upright position while the patient is insensible is apt to produce cerebral anæmia and a loss of cardiac balance. I regard this feature as altogether the most important in this procedure. In my early operations I experienced considerable difficulty because of the too hasty elevation of the head. Since then the upward movement has been more deliberate, and I have not ob-

Fig. 3. Shows the manner of placing the patient in the chair in the extreme tilted position. The anæsthetist is adjusting the back of the chair so that the head of the patient will fall into the head rest, and the nurse is adjusting the shoulder bandage to the chair in the manner represented in Fig. 4. From the position shown in Fig. 3 the body is slowly raised to the upright posture.

served the slightest disturbance which could be attributed to the change in position.

After the upright position has, in a gradual manner, been attained, the patient is under as complete control and in as safe a position for the subsequent operative manipulations, as he would be if in the prone position. No time is lost in placing the patient in the chair and

raising him to the upright position, as it is done during the time which would otherwise be used to bring him under the influence of the anæsthetic to a degree sufficient to permit operation. Anæsthetists acquire the knack of placing the patient in the chair and raising him to the upright position in the first or second lesson. The patient attached to the chair in this manner is practically a part of it, and can be turned from side to side or tilted forward without in the least disturbing his relation to the chair.

The advantages which may be claimed for the upright position are great and many; the disadvantages small and few. One of its chief recommendations is the reduction of the amount of hæmorrhage during an operation. During the removal of lymphoid growths from the pharynges of children, the hæmorrhage is rarely as much as an ounce, but is usually less than half an ounce. During operations of the same character while the patient is in the prone position or with the head hanging over the edge of the table, the amount of blood lost, as estimated by a number of authorities, varies from two to eight ounces. Operations upon the nasal sæptum, during which superabundant tissue is removed and the sæptum incised and broken, are commonly performed in the upright position with a loss of less than one ounce of blood, and when the suprarenal capsule solution is applied I have known as little as three drachms of blood to be lost. Hæmorrhage during this operation when the patient is in the horizontal position is, at times, very free, but the average quantity of blood lost has not yet been determined. The amount is, however, very much in excess of that lost when the patient is in the upright position. Dr. Emil Mayer, one of the most active operators for correction of deflection of the sæptum, has agreed to make an estimate by measuring the amount of escaping blood in a long series of cases.

The explanation of the difference in the amount of blood lost in the two positions lies in the fact that, under ordinary conditions, when the body is upright there is less blood pressure in the vessels of the head than when

the body is in the prone position. This is especially true when the patient is under the influence of a general anæsthetic. The amount of blood which can be withdrawn from the body without harm varies in different individuals. A moderate amount of bleeding will do no harm in the comparatively healthy, but the very young, the aged, the feeble, the cachectic do not bear well the loss of much

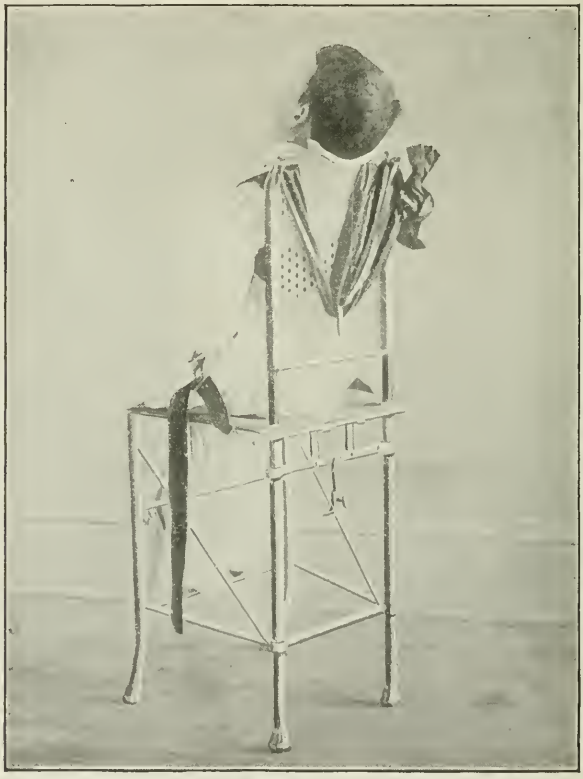


Fig. 4.

blood. The abstraction of a considerable quantity of blood from an anæmic child adds to the cachexia, diminishes its rallying powers, and reduces the bodily resistance in the event of the onset of any special disorder. Shock is felt more by the child than by the adult, and, though the child recovers from the shock more rapidly,

the ultimate recovery will be retarded if a considerable amount of blood has been lost.

I am of the opinion that the middle-ear complications, such as acute catarrh and suppuration, which occasionally occur after operation in the nose and nasopharynx, are commonly caused by the retention of blood clots about the Eustachian eminences. When operations are performed in these cavities with the patient in the prone position or hanging-head position, the blood collects in the vault of the pharynx, which, in such a position of the head, acts like a cup to receive the blood. Being exposed to the air, the blood quickly decomposes, becomes septic and irritating, and acts in causing inflammation in the middle ear in much the same way as a postnasal cotton tampon too long retained. I have yet to see a case of inflammation of the middle ear occurring after ether operations upon the nose or nasopharynx in the upright position, and this I attribute to the fact that the escaping blood is, because of the position, drained into the nasal cavities or lower pharynx and is, therefore, not permitted to remain in the vault of the pharynx in adhering clots, to become a source of possible irritation to the highly sensitive aural structures in the immediate neighborhood.

Another recommendation for the upright position is in the retention of the usual relationship between operator and patient. So earnestly was the maintenance of the relationship sought by one of our American operators that he placed the patient face downward, with the head over the edge of a chair, and operated while lying upon his back and looking up into the patient's face. I believe that much more thorough and expeditious work can be done in ether operations if the relation of the operator and patient is the same as that employed in everyday work in examining, treating, or operating under local anæsthesia. Operations with the patient's head hanging over the edge of a table, or when the body is in the prone position and the head is turned to the side, must of necessity be much more awkward and difficult than when the head is upright. In the upright position one sees the

various parts in the mouth, throat, nose and ear in the relation, one to the other, in which he is accustomed to seeing them, and while the patient is in that position the operator is apt to map out the field for operative procedure. Therefore, if the upright position is employed in ether operations, it is fair to assume that the manipulations will be much easier, that a much better opportunity will be afforded for the display of skill, and that the operative work will be done more accurately and thoroughly.

The reasons why the upright position should be employed in ether operations upon the nose, throat and ear may, in conclusion, be summed up as follows:

1. The very considerable reduction in the amount of blood lost.

2. The reduction of the chances of ear complications, by securing complete drainage of the nasopharynx of blood.

3. The ease, thoroughness, and accuracy with which operations can be done in the shortest time, by the retention of the usual relationship between operator and patient.

Paper.

SUPPLEMENTARY REPORT ON A RECURRENT TONSILLAR TUMOR.

By R. P. LINCOLN, M. D.,

The subject of recurrence of the tonsil after excision was thoroughly reviewed by Dr. Hopkins at the last meeting of this association. My purpose on this occasion is to complete the history of a case reported by Dr. Delavan at the session in 1897, under the title Tertiary Ulceration Simulating Sarcoma of the Tonsil. Especial interest attaches to this case, not only because the growth recurred, but because of the question of diagnosis, the microscopical appearance of sections from the mass removed at the first operation being differently interpreted by two pathologists. It will be well to epitomize Dr. Delavan's account to remind you of the case:

The patient was a man in excellent physical condition, forty-five years of age, with a healthy family, and whose parents enjoyed good health through a long life, and careful inquiry, in which the family physician cooperated, failed to detect any symptoms, present or past, of possible syphilis. For two months soreness had been noticed in the left side of the pharynx and an increase in size of the tonsil. With this enlargement the tonsil became inflamed and broke down, an erosion appearing near the centre of its surface. This extended until half the tonsil became involved in a deep ulcer, with foul interior and everted edges. The rest of the tonsil was indurated, but there was no marked extension of general infiltration outside of it. Several cervical glands were slightly enlarged

FIG. 1.—The excision surface.

and indurated. There was moderate pain in deglutition and upon palpation. The tonsil was removed by the cold wire snare, and the use of iodide of potassium, previously given, was continued.

Dr. Delavan removed specimens for microscopical examination before his final operation, which were reported upon by several pathologists. Some considered the case one of sarcoma, while others were in doubt. The following is Dr. Hodenpyl's report: "The lesion is one of a chronic hyperplastic nature. If it were a polyedral-cell sarcoma (which is a highly malignant variety), we should confidently expect a rapid growth. . . . The conditions observed, moreover, do not exactly resemble an ordinary chronic hyperplasia, in that, besides a considerable amount of fibrous tissue, giant cells, etc., there is a

very unusual number of endothelial cells in the sections, an appearance sometimes found in cases known to be syphilitic."

Dr. Delavan therefore concluded, because of the absence of rapid growth and the presence of a large number of endothelial cells, the diagnosis of chronic hyperplasia and that of sarcoma should be abandoned and a provisional diagnosis of syphilis of the tonsil made, and adds, "the subsequent history of the case fully confirmed the diagnosis."

The first operation was in November, 1896. Iodide of potassium was taken most of the time during the fol-

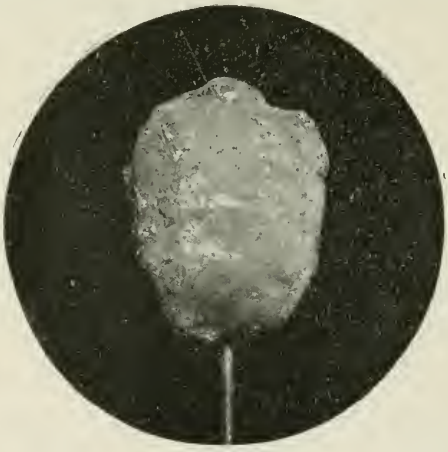


FIG. 2.—The oral surface.

lowing eighteen months. One year from the date of operation, the patient states, the growth had attained its former size. I first saw him in October, 1898. Unfortunately, at this time Dr. Delavan was disabled, and, the necessity for immediate action being apparently urgent, he referred the case to me for operation.

On examination, there was seen a tumor in the region of the left tonsil, occupying half the pharyngeal space. It was light pink in color, with two or three nodules protruding from its surface, which was not ulcerated. It was not painful to pressure, but gave to the sense of touch the firm feel of enchondroma. It was agglutinated to the pillars of the palate, both anterior and posterior, but did not, apparently, permeate the adjacent tissues. There was some external fullness opposite and there were two

or three indurated lymphatic glands, but the tissues of the neck did not appear involved.

The day before my operation, with the aid of cocaine and suprarenal extract, I dissected the pillars of the pharynx from the tumor, and the following day dissected and enucleated the whole mass, the patient being under ether. On this occasion, too, the suprarenal extract was continuously used, and to its effect I ascribe an almost bloodless operation.

At this writing, eighteen months after the removal, there is no symptom of return of the trouble. Dr. Goodwillie, who was present, immediately made a cast of the tumor, a model of which I am thus enabled to show you.

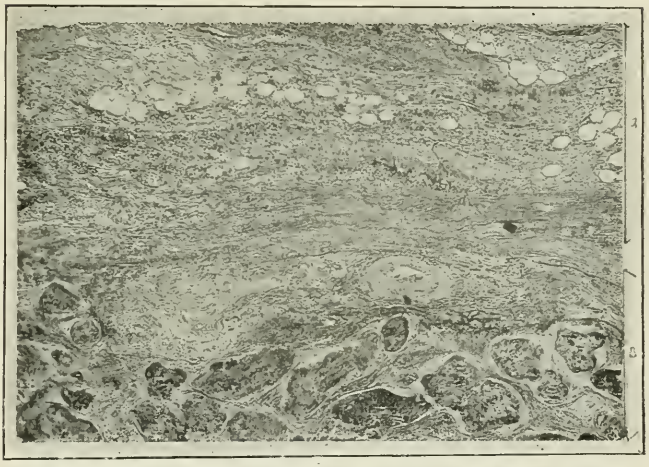


FIG. 3.—*A*, tissue representing the pharyngeal wall and limiting the growth of the tumor outward. The incision effecting the removal was considerably deeper than is shown here, and extended far beyond the limits of the growth. *B*, the outer edge of the tumor. × 85 diameters.

It is an accurate representation in wax. I wish the microscopical disclosures were as satisfactory. I am indebted to Dr. Edwin S. Steese for much painstaking work in mounting sections for the microscope from the specimens, unfortunately not well preserved. The following is his report:

DR. STEESE'S REPORT.—"The removed mass was of firm consistence and oval in shape. It measured 3.5 ctm. long and 2.5 ctm. in diameter. Its surface was

quite smooth, with the exception of a slightly elevated area, measuring 1.5 ctm. by 1 ctm., which projected inward in the direction of the growth of the tumor. This area was composed of a number of wart-like excrescences, and appeared to be the seat of active inflammation.

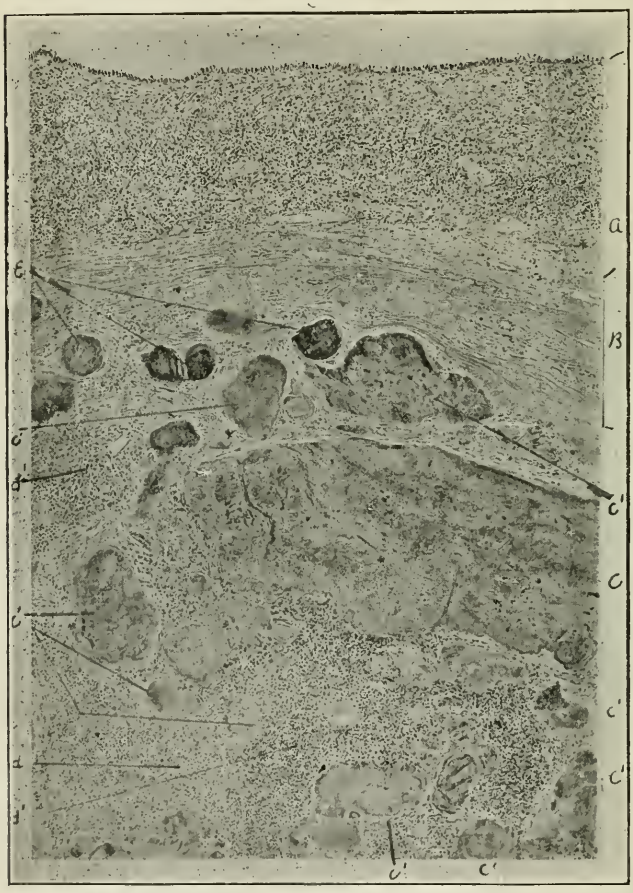


FIG. 4.—*A* lymphoid tissue and surface epithelium. *B*, zone of fibres limiting the growth of the tumors. *C*, large mass of necrosis. *C'*, smaller masses representing different stages of colloid-like change. *D*, round cells and endothelial cells undergoing transformation. *D'*, practically unchanged round cells. *E*, transformed blood-vessels. × 85 diameters.

"Microscopical examination showed the presence of many leucocytes thickly grouped in certain spots, giant cells, and polygonal (epithelial) cells, nearly all of them,

especially the last two varieties, in a more or less advanced state of change, resembling colloid degeneration; many old blood-vessels and new ones in different degrees of development; also numerous large and small homogeneous areas, many of which resembled colloid and mucoid material very closely; but the great majority, and especially the larger masses, were the result of a general necrosis. Some of the smaller masses suggest quite forcibly the possibility of a transformation of cellular elements, and others are the result of a hyaline degeneration of the walls of the arteries.

"Scattered throughout the specimens taken from the less active part of the tumor are a few stellately arranged crystals, resembling tyrosine. Formative processes are very evident in the older portions of the growth, and it seems probable that the greater number of the smaller masses of colloid-like material are portions of a primary large necrotic area which has become wedged apart and broken up by these processes. As the actively involved part of the tumor is approached, the more pronounced is the evidence of a general necrosis, and there is less and less evidence of a new tissue formation. In the most active portion there are large masses of disintegrated tissue, in which are a few spots where the original structure is distinguishable.

"Although there is no direct evidence of any more activity of the cell elements than is frequently found in inflammatory processes situated in glandular structures, yet the changes in many of the cells certainly suggest the possibility that some of the homogeneous matters are a result of a degeneration of cell groups. The preponderance of evidence, however, seems to prove the process to have been one of *simple hyperplastic inflammation,* accompanied by unusual cellular changes and productive of peculiar masses of substance much resembling colloid and mucoid material, which, however, did not respond to the special tests of those degenerations."

Our fellow, Dr. Wright, who made a study of these slides, has kindly submitted this statement, that "such tissue as is preserved from degenerative change is granulomatous and, to my mind, very characteristic of syphilis. I am unable to say what the queer-looking bodies are. The material, however, does not correspond to any abnormal tissue which I have ever seen in adventitious growths; certainly there is nothing malignant about

them. Some of it is doubtless broken-down gumma, but the peculiar laminated bodies in it are unusual.

Dr. Hodenpyl, whom Dr. Delavan quoted in full in his paper, also reported on the later growth. He examined the mounts made by Dr. Steese, and also made

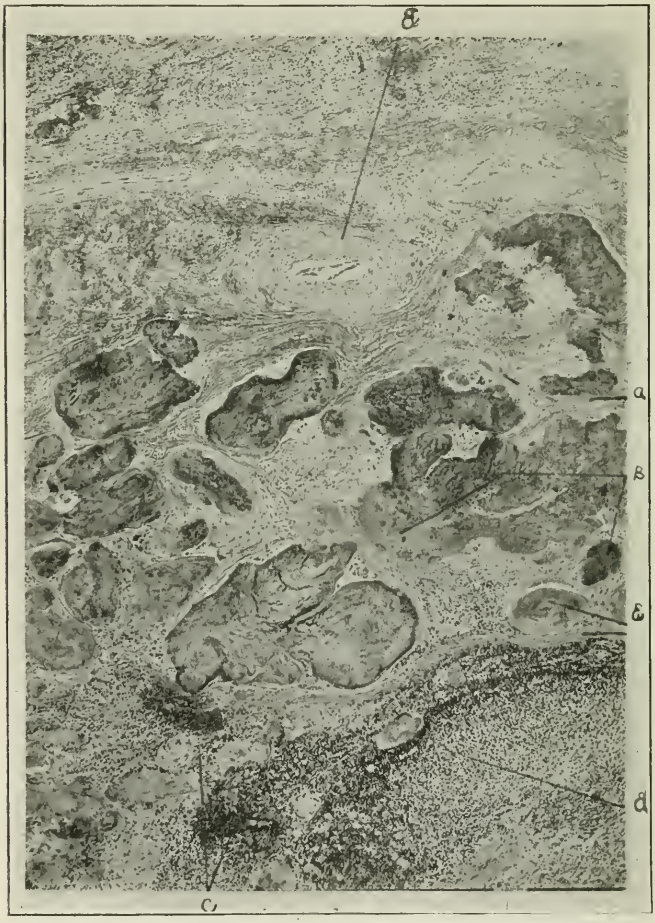


FIG. 5.— *A*. new tissue separating the bodies. *B*, masses of colloid-like material showing different stages of change. *C*, dense aggregation of round cells. *D*, a large area of round and endothelial cells undergoing gradual disintegration. *E*, blood-vessels showing different degrees of transformation. × 85 diameters.

several sections from various parts of the tumor in formalin. After referring to its imperfect preservation, he

says: "One can still make out that one surface is covered by squamous epithelium. In parts there were aggregations of lymphoid elements, and in other parts collections of large flat cells which may be assumed to be proliferated endothelium. I see nothing to warrant the suspicion of malignant disease. As far as syphilis is concerned, there is also no conclusive evidence."

I have submitted these reports from different observers in order that you may have every possible light to form independent opinions as to the nature of the disease and follow to its conclusion an interesting case. Perhaps many, considering the lack of definiteness of histological manifestations and the continued good health of the patient, will justify the suggestion, which may become a conviction, that the tumor should be regarded as being of ordinary inflammatory or hyperplastic origin.

These photomicrographs of sections, as well as the slides themselves, I am happy to be able to submit to your inspection. I wish to offer my thanks to Dr. George S. Dixon for his skillful work in producing them. They show in a general way the peculiar structure of the tumor. One offers a decided contrast to the others, in the lines of muscular fibre it presents. They are of the wall of the pharynx and limit the outward growth of the tumor.

Paper.

SECONDARY HÆMORRHAGE FOLLOWING THE USE OF SUPRARENAL EXTRACT.

By FREDERICK E. HOPKINS, M. D.

In this brief paper but a single point regarding the effects attending the use of the suprarenal extract will be offered for consideration—that of the occurrence of secondary hæmorrhage following its use in operations in the nose. This new agent met with such an enthusiastic reception on all sides, and for us has proved so valuable, I might almost say so indispensable, that no apology is needed for inviting discussion which shall tend to give a better knowledge of any one of its qualities and make its

employment altogether safe. Its universal use quickly established the fact that it had many virtues or that its one virtue, that of producing ischæmia, made it invaluable in a wide variety of conditions; and there is no intention of assailing it in any of these strongholds.

The surprise and gratification attending its use for the first time, enabling one to do a bloodless operation within the nose, cannot soon be forgotten. Notwithstanding all the reports regarding its blanching powers, the experience of actually cutting into the sæptum without starting a smart flow of blood was a strange one, bordering on the marvelous, and as pleasing as it was surprising. After a considerable and highly favorable experience with its use in intranasal operations, and for a variety of acute and subacute lesions of the upper air passages, I became enthusiastically devoted to its use. That it should be possible to charge anything against it, I was for a long time unwilling to admit. Yet, in my first case, there was secondary hæmorrhage.

This patient, Miss C., was a pupil in the high school, and the operation was for the removal of a posterior exostosis of the sæptum. The operation was done under the combined effects of cocaine and suprarenal extract. In accordance with my custom up to this time, the fossa was packed. This packing was removed by the patient about three hours after the operation. A hæmorrhage at once occurred and was sharp enough to alarm the patient, who lived out of town, and I was telephoned regarding it. From what was said I did not consider the hæmorrhage a serious one and gave directions for packing the nose again. This fortunately sufficed to stop the bleeding. I thought this accident due to the early removal of the packing and did not charge it against the suprarenal extract.

Having faith in the blanching power of this agent and wishing to relieve patients of the annoyance of packing, a period now followed in which I left off that, to the patient, disagreeable incident in the technics of nasal operations. In many cases no accident attended this change in the method of after-treatment, yet in a considerable proportion secondary hæmorrhage occurred, coming on from two to six hours after operation. This

was sometimes so sharp as to require packing. As illustrative, and for the purpose of showing that my contention is not simply an assertion, I will mention briefly two additional cases. In none of these three—which might be largely added to—is there a history indicating hæmophilia. The patients represent different ages and different walks in life, and upon all I have done other operations without unusual loss of blood.

J. T., male, 26 years of age, operative in a factory. Operation for a removal of an exostosis of the sæptum, January 4, 1899. About three hours after the operation I was telephoned by the family physician that the patient was having a considerable hæmorrhage. I directed that fossa be packed. An hour later came an urgent call for me to visit the patient, as it was impossible to control the bleeding.

M., 41 years of age, a clergyman. Exostosis was removed from the sæptum, December 5, 1899. Within two hours a message came that the patient was bleeding badly. He was, however, able to return to my office during the day, and after some difficulty the hæmorrhage was controlled. This patient lost a great deal of blood and seemed much prostrated. He was confined to the house for three weeks following the operation.

These cases and many others made it plainly evident that post-operative hæmorrhages were becoming more frequent and troublesome than formerly. Often, in the case of patients living at a distance, the hæmorrhage did not occur until after they reached home; a fact which added to the alarm and, sometimes, to my great inconvenience. I tried to account in various ways for this tendency to bleed; by too early removal of packing, too active exercise such as long or hurried walks, or indeed in any way rather than to charge the cherished extract with the fault. In truth I was conscious of a feeling as of disloyalty to a friend, while the suspicion grew that the hæmorrhage was due to the relaxation following the strong primary stimulation of the suprarenal extract.

In addition to these results following its employment in operations, it was occasionally observed that in some patients there was an idiosyncrasy against its use, violent coryzas following its application to the nasal mucous

membrane. In some patients I observed this irritation at one time and not at another. In one case I sprayed the nose freely with the extract for an intercurrent coryza, and promised the patient speedy relief from her symptoms. She left my office breathing freely and in perfect comfort, properly impressed with the value of medical services as dispensed in Springfield. Within two hours she began to sneeze violently, and kept it up continually for more than twenty-four hours. This patient is a good, strong, clear-headed woman, with an excellent command of English, and a verbatim report of what she said on her return to my office would greatly enliven this paper. This episode was followed by a considerable interval during which most satisfactory results attended the use of the extract in acute and subacute lesions, when another amiable woman, an ear case, had the misfortune to contract a cold and the greater misfortune to complain to me of it when she called for treatment of the ear. I promised her prompt relief and sprayed her nose with enthusiasm and suprarenal extract. She returned to me two days later with eyes still suffused saying, "Oh, Doctor! what did you apply to my nose when I was last here? Within an hour I began to sneeze and kept it up constantly for a whole day." These two cases are mentioned to show the idiosyncrasy of which I spoke, and they at the same time illustrate the relaxation which *may* follow the primary stimulation induced by the suprarenal extract.

Wishing to know if others were having experiences in any way corresponding to mine, I wrote to friends and to representative laryngologists in various parts of the country, inquiring especially as to experience in relation to secondary hæmorrhage following operations performed under the combined influence of cocaine and suprarenal extract. Responses came in every case, and a lively interest was shown in the employment of this truly remarkable preparation. I propose to give you the benefit of these replies. There is a general consensus of opinion that secondary hæmorrhage occurs, or, anticipating its possibility, some whom we know as careful,

prudent men, take no chances, but pack the fossa before allowing the patient to leave the office, thus forestalling any accident. Others continue the effect of the extract by giving the patient a solution which is to be applied to the wound at intervals for a period following the operation. Among the replies there is but one, coming from a man who had used the extract extensively, which states positively that no cases of secondary hæmorrhage have been seen, and the writer does not think they occur. The unanimity of so many other observers leads me to think that this one should be classed among those prudent operators who pack carefully before dismissing the patient—though he did not state that this was his custom.

It may be interesting and instructive to quote from representative letters received in reply to my inquiries.

Dr. J. L. Goodale of Boston writes: "After using cocaine and suprarenal extract in something over one hundred intranasal operations during the past year, I have come to regard the hæmorrhage occurring during the subsequent period of relaxation as always greater than would have occurred under cocaine alone. This fact has seemed more marked in operations on the turbinates than in those upon the sæptum. (My own experience confirms this observation.) In several cases where an operative procedure had to be repeated on the same patient, I used, for purposes of making a comparative test, on one occasion cocaine alone, and on another occasion cocaine and the suprarenal extract. The result has confirmed the above statement. In two cases following the use of the extract the hæmorrhage might fairly have been termed alarming."

Dr. Arthur B. Duel says: "I have used the suprarenal extract very frequently both in hospital and private practice. In almost every instance where the extract has been efficient in controlling the hæmorrhage at the time of the operation, a brisk hæmorrhage has occurred from two to six hours later. This has been so constant that I now always warn the patient that it is likely to occur. It is difficult to say certainly whether this hæmorrhage has

been greater than would have occurred at the time of operation had the extract not been used. From the reports, however, I am inclined to think that it has in several cases. In any case a hæmorrhage coming on in the absence of the surgeon, several hours after the operation, is quite likely to be more alarming to the patient, and also likely to be prolonged by his efforts to stop it. In two cases where I have seen the patients there has been alarming hæmorrhage. In neither of them was there any history which would make me suspect a bleeder. For these reasons I have abandoned the use of the suprarenal extract in cases where practically as good results can be obtained by operating rapidly. I think that my experience is that of the men who are immediately associated with me at the Manhattan hospital."

Dr. J. F. McKernon writes: "In every instance where I used the suprarenal extract I found I had a secondary hæmorrhage, either slight or marked. I always pack the nasal cavity with plain sterilized gauze after an operation."

Dr. Emil Mayer speaks very positively upon the subject, reporting for Dr. Asch's clinic as well as his own. "In all instances we pack the nose with iodoform gauze, as before the use of the suprarenal, and, as formerly, all patients are directed to return to the hospital at any time if the bleeding is at all sharp. The number of patients who have presented themselves at the hospital for hæmorrhage, appearing within the first twenty-four hours, has been very much larger than when cocaine alone was used. In my private practice I have noticed a much greater tendency to bleeding after operation than formerly, and I am compelled to state that I am now very reluctant to use the extract."

Dr. H. L. Swain writes: "My attention has been called to the matter a number of times, but I have not observed secondary hæmorrhage oftener than formerly. Indeed, I have had fewer cases of post-operative hæmorrhages during the past two years than in the year just previous. This may have been pure chance—a better line of cases. Perhaps a little habit I have of using an extra spray of

the suprarenal just before the patient leaves the office may account for my apparent immunity."

Dr. T. Melville Hardie gives the patient a solution of the extract to be used in case of hæmorrhage. He says: "I can answer your questions very shortly because, in general, my experience with the suprarenal extract corresponds with your own. I believe that the bleeding which comes on sometimes after operation is more likely to be severe than when cocaine alone is used. On account of the likelihood of bleeding I am accustomed to give the patient a solution of the extract for use at home, which is to be employed only in the event of hæmorrhage. Since doing this I have had no trouble."

Dr. G. A. Leland speaks positively as follows: "I have been very cautious about trusting wounds after the use of the extract. The extreme blanching of the tissues has made me careful in this respect. I have, therefore, never relaxed my vigilance, and have packed wounds in the nose with as much care as formerly. I think I have had, on a few occasions, reports of rather greater oozing than before the use of the extract. It has seemed to me also that the reaction after the use of this extract in a two-per-cent. solution has been greater than after the use of a ten-per-cent. cocaine solution, and in my method of treating atrophic rhinitis, that is, by the secondary effect of the cocaine, making use of the extreme congestion in the paralytic stage, I have found the extract a good assistant. It seems to me I get more blood into the tissues than with cocaine alone."

Dr. John O. Roe also packs after intranasal operations. He wrote in reply to my inquiry that he had had no experience in the way of secondary hæmorrhages. To quote directly: "In all operations where I would naturally expect to have hæmorrhage without its use I pack the wound so carefully that I have never had any secondary hæmorrhage whatever. The extract so completely arrests the hæmorrhage at the time of operation that one might easily be misled with regard to the probability of its recurrence later on, by believing that no important vessels had been injured. My bump of caution is so

largely developed that in all operations in the nose or on structures in which many blood-vessels are naturally found, I always take it for granted that sufficient have been injured to cause hæmorrhage when the effect of the extract has disappeared, and I therefore pack the wound to guard against such accident. If I left the nostril open, as some of my confreres do in ordinary operations within the nose, I have no doubt I would have had severe secondary hæmorrhage in many cases."

Dr. Leon E. White, of Boston, used the extract daily both in hospital and private practice for a period of nine months, but he had such trying experiences with secondary hæmorrhage that he has abandoned the use of the agent in operations, preferring, so he says, to get the bleeding at the time of the operation, and then to use whatever packing may be indicated, instead of permitting the possibility of a secondary hæmorrhage, which might be fatal, should the patient be unable to get proper medical attention.

I have used the suprarenal extract extensively in acute and subacute lesions of the mucous membrane of the upper respiratory tract, for the purpose of reducing congestion, and always with gratifying primary effect. With few exceptions, already referred to as idiosyncrasies, this good effect has been a relief, which might be called to a certain extent permanent—that is, the relaxation which follows has rarely reverted to the degree of congestion which was present at the time of the first application. Thus spraying the larynx, for example, in a case of acute inflammation has brought prompt amelioration of distress; and a repetition of the treatment, say at intervals of twenty-four hours, has induced steady advance toward complete recovery, there having been no retrogression toward the original state. The same has been true of the nose.

I have had among my patients, suffering from acute inflammation of the nose and throat, several physicians whom I regard as careful observers. Without stating my object, I have asked from each a careful report of his experiences following the application of the extract to the

nose, pharynx, and larynx. Their reports have confirmed the observations above stated. It was such facts which made me so slow to charge the extract with the responsibility for secondary hæmorrhage following operations. In none of the above acute and subacute cases had cocaine been used. When I experimented by applying both cocaine and suprarenal extract to the nasal mucous membrane a very different condition was observed. Here, after a few hours, the relaxation was marked, occluding the nasal fossæ. In the same patient I have sprayed one nostril with suprarenal extract and cocaine, the other with the extract alone. After two or three hours the fossa treated with the two agents was occluded by relaxation of the mucous membrane, while the other one, having the extract only, remained clear. I have not tried this extensively enough to say that such a result always follows. It probably does not, otherwise we would get secondary hæmorrhage in every wound not packed. That it occurs often is undeniable. You will remember that Dr. Leland, in his letter, says he makes use of this fact in the treatment of atrophic rhinitis—that is, by applying both these agents he secures the greatest possible congestion of mucous membrane, in the stage of relaxation.

It would thus seem that the powerful stimulation to contraction of the swollen mucous membrane, induced by the suprarenal extract, while equal to retaining a grip on the dilated blood-vessels for a long time, does not yet suffice to prevent indefinitely, but only to delay, the paralytic stage following the use of cocaine. It also seems to be true that the final relaxation attending the combined use of the two agents is greater than that following cocaine alone.

This presentation is not intended as an argument against the use of suprarenal extract in intranasal surgery. Calling attention to the dangers which attend its use in surgery, carries with it the suggestion of safety. Let the nasal fossa be carefully packed after every operation. My own preference is for the employment of a packing saturated with an astringent.

Discussion.

Dr. W. P. Porcher, of Charleston: I should like to ask the essayist how he prepares the suprarenal extract, and whether he makes it fresh every day.

Dr. Henry L. Swain, of New Haven: The subject of secondary hæmorrhage has greatly interested me. If we look at this matter from the standpoint of the anatomy of the turbinated tissues and sæptum on which we operate, we can readily see that we must have some hæmorrhage following the use of these two agents together or with either alone. As Dr. Hopkins has pointed out, we have more hæmorrhage when they are combined than with either one alone. In any case the hæmorrhage is stopped merely by the presence of the circular fibres in the blood-vessels, which are made to contract. Any coagulating agent put upon the surface increases the coagulability of the clot, but then there is nothing which prevents hæmorrhage any more than in the ordinary wound, except that the vessels are contracted by the action of the circular muscular fibres. Unless that is kept up, relaxation will take place. If we have a small clot stopping up a blood-vessel, and the blood-vessel increases to four times its size by relaxation, the clot is no longer big enough to plug the opening. The question, then, arises, How much more hæmorrhage do we have in these cases than without the use of the suprarenal extract? I have not been able to minimize the hæmorrhage I have seen after operations, as some of the other gentlemen have done who have been quoted.

I remember particularly one hot summer night, two years ago, having an alumnus of Yale come to consult me for the purpose of having an exostosis removed from his sæptum. He said it was necessary to have it done that night, as he was going to take the train for home the next morning. I told him I would do the operation for him. I had used all the suprarenal extract I had in a previous operation a few moments before. I operated on him and used cocaine. There was very profuse hæmorrhage, which gave me much concern for three-quarters of an hour. Finally I succeeded in controlling the hæmorrhage, but the patient was awakened three times in the night by bleeding. He got up and went through various operations of his own suggestion with a view to stopping it and managed to control the hæmorrhage. The patient operated upon with the suprarenal did not have any trouble at all. Perhaps, with this picture in my mind and those

of other cases in which the suprarenal extract was used, my opinion has been somewhat warped.

Dr. JOHN W. FARLOW, of Boston: I have used the suprarenal extract in many cases, and have not seen any trouble following its use in my own work, but I have heard some of my assistants speak of severe secondary hæmorrhage in several instances. Even if there is a possibility of such a hæmorrhage, it is such a great advantage to be able to do a practically bloodless operation, for instance, in removal of sæptal spurs, that we must certainly admit the very great value of the extract. We can see readily into the nose unobstructed by blood, and are able to complete the operation and place a pledget of gauze to control any possible hæmorrhage in a much more satisfactory manner than when the blood interferes with our sight, and we are obliged to grapple more or less in the dark.

As regards its use in causing coryza, I have seen some noses very much irritated by it, and more instances in which the action of the extract caused a decided diminution in an already irritated nose.

As an example of its very beneficial effect, I recall the case of a boy eight or nine years of age, who was well in all respects except that he had very frequent and incapacitating headaches, for which no cause could be found, although he was examined for malarial disease, for poisoning with arsenic, lead, etc., and for possible defect of vision. There was some deviation of the upper part of the sæptum, with pressure against the middle turbinal. An application of the suprarenal extract to the upper part of the nose caused an almost magical disappearance of the headache. He experienced the same relief on several later occasions, and after he had used it more or less frequently for about two weeks the headaches entirely disappeared and have not returned, although he had suffered for eight months. It is now more than three months since there has been any need of using the extract, for there has not been the slightest suspicion of pain in the head.

Dr. A. W. WATSON, of Philadelphia: I have not had much experience in using the suprarenal extract in connection with my operative work. I have found cocaine to be efficient enough. But, as to the question of hæmorrhage after the use of suprarenal extract, it has struck me that the reason for this secondary hæmorrhage is that the relaxation which takes place after the use of the extract is delayed. The relaxation following the use of cocaine takes place within half an hour, as a rule, and it has been

my practice to keep the patient under my control in my office until the relaxation has come on and there is no sign of hæmorrhage. In this way a clot is formed when the vessel is dilated. Of course, if the clot is formed earlier it will not be large enough, as Dr. Swain has just said, for the vessel, consequently hæmorrhage is very apt to occur. If sufficient time is allowed for the formation of the clot, when the patient goes home the increased action of the heart is not sufficient to force the clot out through the dilated vessel. With regard to the suprarenal extract causing acute coryza or inflammation in the nose, I have not seen it do so in ordinary cases. But I had an experience myself, not very long ago, which would suggest that it could do so, not by its physiological effects, but from the possibility of its having undergone decomposition in the nose. I had a severe coryza some time ago, and after the acute symptoms had subsided relaxation took place, so that my nose was stopped up and was in an uncomfortable condition. This was about two weeks after the beginning of the attack. I used the suprarenal extract to reduce the turgescence, in which it was very effective. But in less than twenty-four hours thereafter I had an acute inflammation of all the accessory sinuses. Quite a discharge came from the antrum and other sinuses, which lasted for about a week. The solution used was a fresh extract, and was used only during one day. The extract did not decompose during the time that it was in use, so far as appearance and odor would indicate.

Dr. Farlow: I should like to ask if any of the members are familiar with the preparation which Dr. H. L. Wagner, of San Francisco, showed at our meeting two years ago. I have tried to find it in the market, but have been told that no such preparation was to be obtained.

Dr. James E. Newcomb, of New York: I desire to say that Dr. Wagner gave me a little of his preparation, which I put on my shelf and kept some months before I opened it. When I did open it there was a distinct putrefactive odor, although the phial was apparently well sealed. It was entirely unfit for use.

Dr. Swain: I believe that if the fresh glands can be obtained, it is possible to make a solution of their active principles in very dilute acetic acid, and that this solution can be put up in sealed glass tubes and kept indefinitely, giving one a perfectly fresh solution at all times.

Dr. HOPKINS: I have nothing to say except reply briefly to the remarks of Dr. Porcher. I have not followed one rule in making the solutions. I first used sterilized water, and later antiseptic solutions, and in neither case did it seem to make any particular difference.

Dr. PORCHER: Do you prepare the extract fresh every day?

Dr. HOPKINS: I did at first with sterilized water, and this fresh solution was just as irritating; later I used an antiseptic solution, and this was as well tolerated and effective after a considerable period.

The object of my paper was to call attention to the fact that secondary hæmorrhage seemed to occur more frequently than we had been led to believe, but not in any way would this seem to me to contra-indicate the use of the extract; it would only show that we should exercise more care in the after-treatment of our patients.

Paper.

A CASE OF OZÆMA OF PROBABLY SPHENOIDAL ORIGIN.

By JOHN W. FARLOW, M. D.

Miss G., twenty-one years of age, consulted me some time ago on account of a nasal discharge, with the formation of offensive crusts in one nostril. She had been under the care of very competent physicians in another city, but their treatment had effected no great improvement. The crusts and odor reappeared with very undesirable rapidity, even when the treatment was carried out regularly and frequently, and she was quite discouraged.

I found that the disease was confined entirely to the left nostril; the inferior turbinal was much shrunken and the entire mucous membrane markedly atrophic. The nostril, especially its posterior portion, was filled with greenish crusts having the characteristic odor of ozæma.

Knowing the ill success of my predecessors, I used the greatest pains in cleansing the nostril with alkaline solutions followed by various antiseptic applications and powders. I tried also tampons and massage, but it all needed to be done over again in a short time. During my vacation she was under the care of one of my friends, who was very assiduous in his treatment, but he sent her back to me on my return, saying he thought she was no better, an opinion in which she fully concurred.

She then came to my office nearly every day for two weeks, and, although the odor was naturally much diminished, the profuse discharge persisted. One day while passing the probe I succeeded in pushing it into what was evidently the sphenoidal sinus. I washed out the cavity with peroxide of hydrogen and alkaline solution, hoping for only a slight benefit. After I had repeated this on several successive days the entire character of the disease seemed to change; the odor was gone and the crusts no longer appeared. She came to see me after a two weeks' vacation out of town, having forgotten to take her atomizer with her. Although the nose had not been cleansed since her last visit to me, I found the nostril practically free from secretion.

I saw her then at longer intervals and found the improvement a permanent one. She comes to see me now only once or twice a year, and, if there is any tendency to crust formation, the passage of the probe and curette and the washing out of the sphenoidal sinus are always attended with lasting benefit.

The case interested me very much from its obstinacy and the fact that it was unilateral. I was not able to learn anything in regard to the beginning or possible origin of the trouble. The story was merely the familiar one of long-continued, offensive catarrh with but little relief from treatment. Perhaps the sphenoid was affected in consequence of the disease of the nasal cavity, but the improvement following treatment of the sphenoidal sinus was so marked that the inference seems justifiable that the sphenoid was an important factor in the disease.

Discussion.

Dr. J. E. Logan, of Kansas City: I have been much interested in Dr. Farlow's paper because my experience coincides with his in at least two cases which I have had of a similar nature. I have never been able to gain access to the body of the sphenoid in the manner suggested. One case I have in mind was unilateral, in which large, foul crusts would form. I operated and gave relief by opening the posterior ethmoidal cells. The patient from time to time complains of some crust formations in the upper portion of the posterior nares, suggesting to my mind that possibly the body of the sphenoid was involved. The case reported by Dr. Farlow and the relief obtained

by his treatment only go to prove what I have often thought and advocated, and that is, that these particular pathological phenomena characterizing atrophic rhinitis are secondary to sphenoidal, ethmoidal, or frontal-sinus inflammation, developed there by conditions of deformity, climatic influences, or the like, and that the relief is to be found in proper attention to these accessory sinuses.

Dr. SAMUEL W. LANGMAID, of Boston: I have seen five cases of acute sinus inflammation within two weeks. In the forenoon of the day I left Boston to attend this meeting, I had the case of a gentleman who had suffered great pain for several days. There was very little frontal pain. He came to my office for relief, and after cocainizing the parts I used a probe, with the consequent discharge of considerable bloody mucus. Some of it contained purulent matter. There is no doubt that influenza is the cause of much sinus trouble. If the inflammation of the mucous membrane subsides quickly and if the obstruction in the orifices of the outlets of the sinuses is removed quickly, there may be nothing left. The case would simply be an acute one which would go on for perhaps forty-eight or sixty hours. Occasionally we observe cases of chronic sinus trouble as the result of influenza. Many such cases have occurred as the result of the last epidemic of this disease. We ought in every case to ascertain the condition of the sinuses and not be content with simply spraying the nose. By opening these sinuses in a gentle way, we may guard against the development of chronic trouble.

Dr. A. W. WATSON, of Philadelphia: I am very glad to have heard the paper of Dr. Farlow, as it confirms my own views on this subject. I have been in the habit for some time of looking upon all cases of ozæna as occurring independently of atrophy—that is to say, there may be atrophy of the nose without the ozæna, without crusts, or with crusts without ozæna. We see many such cases. I have seen cases in the same family, in which one child would have a severe ozæna, while in examining another child I would find a case of atrophy, and cases without any ozæna at all and but few crusts, or with crusts without ozæna. It has been my experience that cases of ozæna are due to infection of the accessory sinuses, particularly the sphenoid and posterior ethmoid cells. I have for some time, as a routine measure, washed out these cells and the spaces between them, that is, the posterior spaces, behind the superior and middle turbinates and in front of the sphenoid, with a curved or straight cannula that will

pass into the sphenoid cells themselves, and I have had good results. In a paper read before the Laryngological and Otological section of the College of Physicians of Philadelphia, I mentioned this method of treating atrophic rhinitis, and my results have been good. I have had many obstinate cases of many years' duration which were relieved by this method, the patients remaining free from odor when seen at long intervals afterward. I have been using a weak solution of formaldehyde in an alkaline solution, but I think the chief point in the treatment consisted in washing out the cells and spaces in the posterior region.

Dr. Farlow: There is one point in the treatment of these diseases which is important, and that is, after the nose is thoroughly cleansed, the patient should be asked to remain in the waiting-room without blowing the nose, with the head in the upright position. After a while the nose should be examined again, when, possibly, we may get a clue to the source of the secretion.

Paper.

BULLOUS ENLARGEMENT OF THE MIDDLE TURBINATED BONE (CONCHA BULLOSA).

By J. PAYSON CLARK, M. D.,

Case I.—Annie F., aged forty-five, married, came to the Throat Clinic of the Massachusetts General Hospital in July, 1899, complaining of nasal obstruction and frequent headaches, which she had had for over a year. There was no sense of pressure, there was no pain in the nose itself, and there was no nasal discharge. The sense of smell was diminished. Examination of the nose disclosed in each nostril a smooth, irregularly rounded tumor in the region of the middle turbinate, almost completely filling the space between the sæptum and the outer wall of the nostril and extending down to the lower turbinate. Each tumor was in contact with the sæptum. On pressure with a small probe on the surface of one of these tumors, the probe broke through a fragile, thin wall of bone and entered a large cavity. There was no nasal discharge. Thinking that either the nasal obstruction or the pressure caused by these growths or both might be the

cause of the headaches, I advised their removal. This was done with the cold wire snare, one turbinate being removed on one day, and the other several days later. The hæmorrhage was very slight, and the pain, under cocaine anæsthesia, insignificant. Each growth was removed entire. They were so large that I had considerable difficulty getting them out of the nose without crushing them.

The patient was seen four months after the operation. Nasal respiration was clear, she had no more headaches, and said the sense of smell was improved. The tumors were almost identical in appearance, being about 33 mm. in length, while a section through one of them had a roughly triangular shape, with a vertical diameter of 15 mm. and a base measuring 13 mm. The interior of each was a single thin-walled cavity, communicating with the middle meatus by a narrow slit-like opening, lying close to and parallel with the line of attachment. These cavities were absolutely empty.

Dr. James H. Wright has kindly made the following report of the microscopical appearance: "Transverse sections through the wall of the specimen show the following: The cavity is lined with several layers of columnar epithelial cells, some of them showing cilia, attached to a basement membrane. The cells are not atrophic or compressed in appearance. Beneath the basement membrane there is a zone of loose reticular tissue, extending to a layer of bone and containing lymph- and blood-vessels and a few gland tubules. This layer of bone has the general characteristics of the turbinate bone, but is considerably thinned and has the appearance of being stretched out. External to the bone is found a submucosa rich in mucous gland tubules and covered with an atrophic-looking mucous membrane. No signs of inflammation were observed."

Case II.—Pepi T., aged twenty-two, an Austrian Jewess, was referred to my clinic in March, 1900, for examination of the nose, with the idea of finding some possible cause for headache. She had had occasional headaches for several years of a neurasthenic type. For the past two months she had had pain in the right side of the head, which came on suddenly and had been constant day and night since. The pain was of a piercing, pulling character. She was in the Massachusetts General Hospital from February 27th to March 11th, with severe neuralgia involving the whole right side of the face and head. Glasses were prescribed for refractive error without relief. She had taken various internal remedies

without relief. The diagnosis of the neurological department was supra-orbital neuralgia, right side, and neurasthenia.

Examination of the nose showed a fairly normal left nostril, with the exception of a narrowing in the upper portion, owing to a marked deviation of the upper portion of the sæptum. In the right nostril was seen a large tumor, covered with mucous membrane and completely filling the whole region of the nose above the lower turbinate. It was firm and hard to the touch, and considerable pressure with a small probe did not puncture it. A provisional diagnosis was made of bullous middle turbinate. A cold wire snare was now introduced, which, however, engaged only the lower portion of the growth, cutting off a section and exposing the empty cavity of the dilated cell. The walls of the remainder of the cell lay so close to the deviated sæptum on the one side and the antral wall on the other as to give the effect of being these structures. But, on introducing a probe close to the sæptum or the outer wall, the cell wall could be elevated. The snare was again introduced and the rest of the growth removed entire. There was hardly any hæmorrhage. The turbinate measured 37 mm. in length, 18 mm. in depth, and 17 mm. in width. (See figures.) The outer wall of the nose was much curved outward and no bulla ethmoidalis was visible, while the sæptum was much curved to the left. After the operation the neuralgic pains continued apparently unabated for a week, then began to diminish rapidly and in a week more had disappeared.

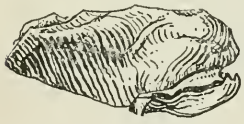


FIG. 1.—Side view.

FIG. 2.—View from the side and behind.

FIG. 3.—View from the side and behind.

I have operated in two other cases of this affection some time ago, of which, unfortunately, I have only very incomplete records. Both the patients were women about twenty-five years of age. Only one middle turbinate was enlarged in each case. The principal symptom was obstruction of one nostril. The turbinate was removed in each case piecemeal by cutting forceps. In one

the nostril was full of polypi and there was a polyp in the cavity of the turbinate. This case was complicated by purulent ethmoiditis.

In considering the ætiology of these bullous or cellular middle turbinates, it is important to recall the anatomical relation of the middle, or, more exactly, the inferior ethmoidal, turbinate. I cannot do better than quote here from Lothrop's valuable monograph on *The Anatomy and Surgery of the Frontal Sinus and Anterior Ethmoidal Cells.* He says: "The lamina of bone forming the internal boundary of the labyrinth . . . is divided sufficiently for descriptive purposes into two triangles by the incisura ethmoidalis inferior and a line projected forward to the anterior-superior angle at the nasal process of the superior maxilla. . . . The inferior triangle is the inferior ethmoidal turbinate bone." It is evident that this turbinate is most closely connected morphologically with the ethmoid bone, and it would seem a not unreasonable assumption that it is a highly differentiated and specialized ethmoid cell. If this assumption is correct, we might naturally expect to find an occasional middle turbinate having a cellular structure, which condition could be looked upon as a reversion to a more primitive type. Now, it is a fact that anatomists have long recognized the existence of turbinates of this variety. Zuckerkandl says: "The form of the inferior ethmoidal turbinate presents frequent variations, of which some have a practical importance. . . . The transformation of the anterior extremity of the turbinate into a great osseous vesicle, *concha bullosa,* which Santorini has described in his *Observationes anatomicæ,* is frequent." To quote again from Lothrop's monograph—In describing the conformation of this turbinate he says: "This" (the outer) "surface is often rougher than the internal aspect of the turbinate, and characterized by depressions and pockets even of considerable size. The openings of these depressions may become constricted, thus giving rise to cell-like formations, resembling the ethmoidal cells. There may be a single large cell or more commonly several smaller cells, all of which open into the space . . .

known as the middle meatus of the nose." And, a page or so further on, he says: "This" (the variety just described) "is the smaller and unusual variety of well-marked cell. In about 200 observations, turbinate cells were present in eighteen per cent. of the cases. One-third of these were of the variety arising from the turbinate sinus, two-thirds were cells differing in character and mode of origin, as well as location of their ostia. This latter variety is characterized by the presence of one large cell rather than several smaller ones, is located more commonly near the anterior border, which may be eight to twelve millimetres wide." [In my second case, as stated above, the turbinate was 17 mm. wide.] . . . "Of these larger cells, two-thirds open above the inferior ethmoidal turbinate into what is commonly called the superior meatus of the nose. . . . The cell may occupy a part of the turbinate only; or occupy the greater portion of it, when it has received the name of concha bullosa."

After a careful review of the literature of the subject I can find but twenty well authenticated cases which were operated on, making, with my four cases, twenty-four in all. Of these, twenty were in women, three were in men, and in one the sex is not mentioned. Seventeen of the patients were over twenty years of age, three were under twenty (the youngest being sixteen), and in four the age is not mentioned. Only five of those whose ages were mentioned were over thirty.

The fact that these large cellular turbinates, requiring operative interference, occur only in adults is not, it seems to me, an argument against their being of developmental origin. "In the fœtus at birth there are no ethmoid cells; these are not formed until the fourth or fifth year." (Holden is my authority for this statement.) As is well known, the growth of the osseous system is often not complete until the twenty-fourth or twenty-fifth year. Until about this time the various air spaces in the bones may continue normally to increase in size. In many of these bullous turbinates there is no evidence whatever of an inflammatory process, the large cells being apparently sim-

ply the result of an anomalous and excessive growth. In this view of the origin of these growths any evidence of an inflammatory process, such as polypi or purulent contents, is simply adventitious.

Another explanation of the origin of these cells, which seems to me much less probable, is the one suggested by MacDonald. The lower border of the middle turbinate normally curves outward, forming a concavity called the sinus of the turbinate. According to this theory there is an osteophytic projection of the free border of the turbinate, which continues to grow outward, upward, and inward until it almost meets the base of the turbinate, leaving a narrow slit-like opening into the upper part of the middle meatus. Fraenkel, Hajek, Heymann, and Zuckerkandl, while believing the cells to be congenital, think they owe their large size to suppuration. This view is not consistent with the fact that pus was found in only four of the cases reported.

Why these cases should occur almost without exception in women I am at a loss to say, nor can I find any satisfactory explanation given by other writers on the subject. The only explanation worth mentioning is that this condition would probably not arouse the same peculiar reflex symptoms in men as in women, and has therefore been generally overlooked in the former. But this does not seem very likely, considering the care with which the nose is examined to-day.

In twelve of the twenty-four cases the cells contained air only, five were complicated by the presence of polypi, one contained a yellow viscous fluid, four contained pus, and in seven the contents was not mentioned. Of fifteen cases, in thirteen the cell was single, in one there were two cells, and in one the cell was spoken of as "multilocular." In only four out of twenty-one cases were both middle turbinates affected.

The most prominent symptom is headache, sometimes accompanied by a sense of pressure in the nose. Obstruction to nasal respiration, which generally exists, comes on so gradually (when this condition is uncomplicated by polypi) that it is not spoken of so often as the headache.

The pain is generally of a neuralgic character and may take the form of a hemicrania, or it may be limited to one or more of the divisions of the fifth pair of cranial nerves. The sense of pressure in the nose may exist without the secondary neuralgic symptoms. The sense of smell may or may not be affected. The nose as a rule shows no deformity externally. It may, however, be broadened on the side on which is the bullous turbinate. Discharge occurs only when there is inflammation of the cell cavity or of one or more of the adjacent sinuses. Vomiting occurred in one case with the paroxysm of pain, and in another there was loss of consciousness for two days. In one of the reported cases which was complicated with polypi the patient had asthmatic attacks. In another there were photophobia and overflow of tears.

The diagnosis of this condition is not difficult. Given a rounded swelling situated in the region of the middle turbinate, the feeling with a probe will at once exclude a polyp or hypertrophy of the mucous membrane. The comparatively normal appearance of the mucous membrane would probably rule out any new growth, while the fragility of the bone would exclude osteoma. An ethmoid bulla so dilated as to simulate this condition must be extremely rare. In such a case there would probably be a middle turbinate also present. Symptoms are generally relieved by the removal of the growth.

Some of the reported cases were treated by the galvanocautery or the injection of some irritant solution, such as chloride of zinc. These procedures are mentioned only to be condemned. Besides their being quite ineffective, the inflammation resulting might cause secondary empyema of one of the accessory sinuses or even meningitis. Removal with the cold wire snare, conchotome, or cutting forceps is the only rational treatment. Hæmorrhage is usually insignificant.

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Discussion.

Dr. Jonathan Wright, of Brooklyn: This paper is certainly a very clear exposition of the subject, but there is one criticism to make with reference to the ætiology, and that is, that the enlargement of the middle turbinate is developed from fœtal life without any inflammatory action connected with it. I do not know that Dr. Clark meant to state that, but in some of the remarks in the paper I should judge that was the tenor of it. I doubt very much whether this is true. I have seen two or three cases in my clinical work, and have examined seven or eight others microscopically, and I have come to the conclusion that there is a pre-existing cavity in the end of the turbinate bone to start with, and the subsequent development is in all probability due to

an osteitis. Without going into the pathology, which the author has stated clearly, there is one point that he did not touch upon, and that is with reference to the peculiar location of the osteoblasts and the osteoclasts. They are respectively the cells which form bone and which absorb bone, and the histologist, as you know, says they are interchangeable; that is, the osteoblasts can be changed into osteoclasts. They are of a little different shape, but by careful study one can recognize them. If we study them carefully, we nearly always find that the osteoblasts are larger, rounder, and fuller cells. The osteoblasts are usually situated upon the convex surface of the cavity. There is a bulbous cavity like this (indicating); we find the osteoblasts arranged around the outside of the bone. The cells on the inside of the concavity are of different shape and correspond closely to what are called osteoclasts. It occurs to me that there is probably an osteitis set up in the walls of the pre-existing cavities, and by this unequal growth the osteoblasts form bone upon the outside and the osteoclasts absorb bone on the inside; beneath the lining of the embryonal mucous membrane there is this enlargement in these cavities going on.

While I am not perfectly sure of my observations in these cases, because it is hard to distinguish between osteoclasts and osteoblasts, it seems to me a plausible explanation of the formation of these cavities. I do not believe that these cases exist in children, or until a considerable time after puberty. If they did exist, we should see them. They would give rise to symptoms, so that at least a few cases would be seen.

As I remember the literature of the subject, I think Dr. Clark has overlooked the report of a few cases. I had a number of cases some few years ago, and when I looked up the literature at that time, there were eighteen or twenty cases on record. It seems to me that there are more cases than that on record now. It is certainly very interesting to know how this peculiar condition arises. It seems to me that it requires a good deal of imagination on the part of MacDonald to advance such a theory as he has. The question of sex in these cases is interesting. Why they should appear in women almost exclusively, or why they should appear in women only after the age of puberty, is certainly a very remarkable thing. We have notable examples of sex in nasal pathology, and atrophic rhinitis, of which we speak, is one. This is another. This feature is entirely inexplicable; yet there must be some cause for it.

Dr. Clark: I have only one or two points to consider in reference to what Dr. Wright has said. I am not a histologist, and I have to take the word of others as regards the presence of inflammatory action; but the gentleman who examined the specimens for me distinctly stated in his report that there were no evidences whatever of inflammatory action. I must say that the growth of such large bodies as these would seem to require some sort of chronic inflammatory process, and what Dr. Wright has said is very interesting and pertinent to the matter. As regards the number of accounts of cases which I have found, I found many more, but I felt compelled to exclude them because they were incomplete, or did not seem to me to answer the description of the cases that I have detailed.

Paper.

FIBROMA OF THE LARYNX.

By A. B. THRASHER, M. D.,

Fibromata of the larynx are not sufficiently rare or as a rule of so much importance as to justify calling the attention of specialists to a particular case. Yet the case which I beg to report presents such peculiarities in the distribution of the connective-tissue fibres as to have called for the most heroic and rapid measures to prevent a fatal termination to what we are accustomed to name a non-malignant growth.

I have found but two other similar cases among a large number of reported fibromata, one of which terminated fatally in a very short time after coming under the observation of one of the most skilled surgeons of his day; the other was treated quite as the one I have now the honor of reporting to you, and with the same fortunate results.

In April, 1897, there came to my office Mrs. H., aged fifty-six, suffering from dyspnœa and hoarseness. She was a large, well-nourished woman whose previous health had been excellent. There was no family history of malignant or other hereditary disease. She had recently had recurrent attacks of hoarseness, from which she had

before made rapid recoveries, her voice, however, gradually growing coarser.

Within the past few weeks she had become so hoarse that her voice would at times degenerate into a coarse whisper, and was at best of a rasping character. She breathed heavily on the slightest exertion and presented a beginning cyanotic countenance. The dyspnœa was rapidly progressing and it was for relief from this that was the immediate cause of her consulting me. She had a chronic nasopharyngitis. The faucial walls were red and thick, and the glandular tissue in the pharynx was hypertrophic.

The laryngoscope revealed a growth occupying the posterior and lateral walls of the larynx. The vocal cords were pushed into the centre of the larynx, and the arytænoids, especially the left, were much enlarged. During phonation the cords approximated fairly, but they had a markedly deficient abductor movement.

The color of the intralaryngeal mucosa was somewhat reddened and there was present an increased amount of mucus. I could readily pass a laryngeal sound between the cords, the presence of the instrument creating only a small amount of reflex disturbance. With my cutting laryngeal forceps I removed a small mass from the thickest portion of the posterior wall which I submitted to Dr. Albert Freiberg, of the Cincinnati Hospital, for microscopic examination. Since she lived in a town an hour's ride from the city, and wanted to return home the same day, I put her on increasing doses of iodide of potassium for a week, with instructions to return at the end of that time. Dr. Freiberg in the meantime reported to me that the growth had the characteristic appearance of a fibroma underneath a normal mucous membrane.

In about the appointed time she returned with all her bad symptoms worse. She was by this time extremely cyanotic over the face, lips, and eyes. Loud, sonorous râles could be heard accompanying her respiration. The mucus could be seen bubbling up between the cords, and the lumen of the larynx was much diminished by the swelling of the lateral tissues. So alarming were her symptoms that I immediately sent her to the Good Samaritan Hospital, where I proposed to do a laryngotomy and attempt to give her a larger air passage. The next morning, assisted by Dr. Harf, Dr. Wade Thrasher, and the hospital internes, I did a preliminary tracheotomy and inserted a tube, thoroughly packing the trachea around the tube with iodoform gauze, so that no blood could reach the lungs. This done, I immediately laid

open the larynx from the lower border of the cricoid cartilage, through the cricoid and the anterior angle of the thyroid to the base of the epiglottis. From the lower border of the cricoid to above the vocal cords I found the mucous membrane pushed into the lumen of the larynx, causing it to present a flattened instead of the normal concave surface.

There were no special circumscribed growths, although about the posterior superior region, in the neighborhood of or over the arytænoids, was the greatest thickening. An incision into this thickened mass revealed a submucous hypertrophy, of apparently connective tissue, extending down to the cartilaginous framework of the larynx.

By means of a cutting forceps, aided by sharp curettes, I removed the fibrous tissue from each side of the larynx until I thought the opening would be sufficiently large for breathing requirements. In my removal of tissue I did not regard the position of the vocal cords, although I thought the infiltration was not so great along the middle and anterior attachment. I saved some of the largest pieces for further microscopical examination, and subsequently Dr. Freiberg reported that there was still present only the appearance of connective-tissue hypertrophy.

The inner surface was then cauterized with a saturated solution of Merck's trichloracetic acid and dusted with iodoform, and the cartilages were brought together with silver-wire sutures and dressed as usual.

Breathing through the tracheal tube was good, the râles in the chest subsiding after a few days. After a period of less than a month I was able to dispense altogether with the tube, the laryngeal opening being quite sufficient for all breathing requirements.

I have seen her at intervals since the operation. She has now perfect health, her color is good and her voice is quite audible, although rough and hoarse. The inner surface of the larynx presents a roughened appearance, but there is no indication of a recurrence of the neoplasm or of a further contraction of the breathing channel.

The patient came to me with an accompanying diagnosis of cancer of the larynx; but the slowness of the growth and the absence of pain and violent local inflammation quickly pointed to a benign rather than to a malignant neoplasm. The gradual encroachment on the breathing space, finally giving rise to progressively increasing dyspnœa, than which there is nothing more

alarming to the patient, was the single symptom driving her to seek relief.

In looking over the literature of such cases I have found in the *Transactions of the Pathological Society of London,* vol. ii, 1858, the following report, made by Dr. Bristowe, of a case so like mine that I beg leave to report a synopsis: A woman, aged forty-six, with a loud, ringing whoop on inspiration, expiration not being impeded, died suddenly in two days after her admission into St. Thomas's Hospital. She had been ill for thirteeen weeks, suffering from oppression of the chest and gradually increasing dyspnœa. An autopsy revealed the upper part of the larynx above the vocal cords apparently normal, although the cords were parallel and in contact. The mucous membrane below the vocal cords, instead of being concave and forming the walls of a hollow cylinder, bulged out on each side so as to form two flat vertical walls, sloping off gradually below to the normally circumstanced mucous membrane of the trachea. The flattening of the surfaces had evidently been produced by mutual pressure, and where the pressure had been greatest the surfaces were rendered opaque and presented two or three small roundish or oval excoriations. On applying pressure with the finger, it was distinctly ascertained that the protrusion of the mucous membrane was due to the presence of some softish elastic substance beneath it; and on vertical section, a small mass of material in part opaque, buff-colored, tough, and fibrinous, in part softish and somewhat flesh-colored, and in part distinctly vascular, was found seated on the upper border of the cricoid, without involving it or extending into the muscular and cellular tissues around. This deposit touched neither the posterior nor the anterior part of the cricoid, but was symmetrically disposed with reference to its lateral portions, and formed protrusions about equal in degree both inward toward the canal of the larynx and outwardly toward the thyreoid cartilage.

Although molded on the cartilage, it appeared to be developed essentially in the muscular and cellular tissues, and in several places the muscular fibres were distinctly continuous with it. The deposit yielded no juice, and presented all the characteristics usually manifested by the fibrinous formations seen in the muscular substance of the heart.

Dr. Gurdon Buck reports to the New York Academy of Medicine (*Medical Record,* 1870) a somewhat similar case. Aside from these I can find no cases where an in-

tralaryngeal fibroma has been so manifold in its attachments.

Discussion.

Dr. W. K. Simpson, of New York: Did the microscopical examination of the tissue that you removed at the time of operation agree with the first microscopical examination, so that the case could be put under the head of fibroma?

Dr. Thrasher: The examinations were practically similar in character.

Paper.

A CASE OF PIN IN THE LARYNX FOR TWO YEARS; REMOVAL BY ENDOLARYNGEAL METHODS.

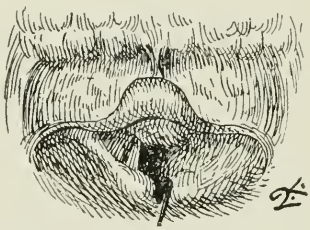
By A. W. DE ROALDES, M. D.,

In May, 1894, Bertha R., aged about nine years, white, from Poplarville, Miss., was brought to my office with the following history: Two years previously she had sucked down her throat a pin that she held in her mouth. She was immediately seized with severe coughing and choking, accompanied with little hoarseness, however. Dr. J. M. Thornhill, her family physician, was called in at once, and, hoping the pin could be dislodged, administered the white of an egg, corn bread, and other rough food, to no avail. In the doctor's own words, "a subacute inflammation was soon set up, with light fever, sore throat, and coughing and gagging spells. A profuse discharge of saliva, with inability to swallow any but liquid food, and pain even on drinking water were also among the symptoms. The night's rest was particularly disturbed, the patient having to assume an almost sitting position, to prevent choking from the accumulating secretions, the respiration being so noisy as to disturb the whole house. I advised her being taken to New Orleans for treatment, but it was deferred until the parents were convinced of its necessity by the aggravated condition of the patient and the appearance of a hard swelling on the outside of the neck. For nearly two years she had lived and suffered, but had ceased to grow, and had declined in

health and spirits so that, when she left home for treatment, she was almost a physical wreck."

When first seen by me, the little patient was so nervous and apprehensive of pain, the throat was so irritable, the parts were so swollen, and the secretions were so abundant that, although the presence of the pin in the larynx was quickly confirmed, it took nearly two weeks of laborious training to make even an imperfect examination. Short glimpses of the larynx with the mirror and gentle touching of the parts with the finger allowed finally a sketch to be made, for which I am indebted to the skillful pen of Dr. Q. Kohnke.

The sharp point and about one-third of its length are seen emerging from the posterior aspect of the larynx, having passed through the right arytænoid eminence, near its base and to the inner side, so that it lay almost in the interarytænoid tissue, and projected backward until



Pin Embedded in the Larynx.

the point came in contact with the posterior wall of the pharynx, just above the mouth of the œsophagus. The constant irritation at this point had given rise to the formation of a cluster of granulations on the pharyngeal wall. The head of the pin was imbedded more deeply, in the right side of the larynx, just above the false vocal cord, this part being correspondingly swollen, so that the true vocal cord was not plainly visible. On phonation, the left arytænoid was almost if not completely immovable, while the right was not affected in this way, but moved freely toward the middle line, with no tendency, however, to a compensatory action.

Externally, a large indurated lump covering the whole anterior surface of the larynx, from the hyoid bone to the cricothyreoid membrane, could be observed, the result of a chronic infective process from within. An attempt at extraction having failed, due to the resistance of the patient upon the introduction of the forceps as much as to the abundance of the secretion and the very imperfect action of the cocaine, it was decided to make another at-

tempt later, with a general anæsthetic, granting meanwhile the request of the patient to go home for a few days to rest.

On July 5th, with the assistance of Dr. Thornhill and Dr. Gordon King, the patient being anæsthetized with the A. C. E. mixture, the emerging point of the pin was seized under a light with the forceps. Two attempts at extraction proved ineffectual, owing to the sticking of the point in the posterior wall of the pharynx. After seizing the point of the pin for the third time with the forceps, the mirror was laid aside and the left index finger was introduced deep into the lower pharynx, behind the larynx, with the object of steadying the latter and of pushing it forward at the same time. Thus more space was obtained between the arytænoid and the vertebral wall wherein to partly pull out of its bed into a horizontal position the body and head of the pin before beginning to change the line of traction in the upper direction. In this way the posterior wall was cleared without its being pricked, as in previous attempts, by the sharp point and the damage to the laryngeal structures minimized.

During this manœuvre so much resistance was experienced that under the pressure of the blades of the forceps they sprang and became twisted, the pin escaping from their grasp.

Fortunately, when this occurred, the pin had been disengaged from its bed and was immediately brought up in the mouth by the left finger engaged in the lower pharynx, and it was found in a towel by the nurse, amid abundant secretions that she had wiped from the mouth of the patient.

The pin was an ordinary brass one, about an inch and a quarter in length, and was rough and oxidized.

The patient left the next day, and recovered perfect health, the swelling of the neck not disappearing, however, before three months.

In connection with the nature and treatment of this case, the following points may be of interest:

1. The site of entrance of pins imbedded in the larynx, I admit, is at times, as in the case of S. W. Langmaid, a matter of mere conjecture. In that regard, I would venture the following theory: That frequently the pin must be sucked head downward deep into the larynx and even into the trachea; it is then coughed up in the next violent expiration, to become implanted from below, into the structures from which subsequently the point emerges.

This could explain the strange and unnatural position of the pin as located in the cases of Semon, Wilkins, Berger, Langmaid, and others, and as seen in the accompanying sketch. Its migration, unlike that of a needle, is impeded by its head.

2. The position will often be accurately ascertained by the laryngoscope, if not at a first glance, at least after repeated examinations and proper training of the patient. The digital examination will sometimes be of service. Under certain circumstances we must not fail to imitate Mackintosh, who, as in the case of Downie, detected with the Röntgen ray the presence of a pin which was hidden in the right ventricle of the larynx, which otherwise could not be located.

3. The mode of extraction will generally be determined by the relative position of the head and the point of the pin, there being very rare occasions where an external operation is necessary.

4. Considerable difficulties are, nevertheless, encountered in certain cases by the intralaryngeal method, on account of the age of the patient, the swelling and irritability of the parts, the abundance of secretions, and the transfixed condition of the tissues.

Paper.

A PECULIAR CASE OF MIGRATORY FOREIGN BODY, WITH X-RAY ILLUSTRATIONS.

By D. BRADEN KYLE, M. D.,

I desire to report this case of migrating foreign body in the face on account of its unusual interest and the complicated and varied symptoms which were present.

While the marked symptom in each attack was the frightful neuralgic pain, yet the change in the site of the pain, soreness, and swelling was the misleading factor. At times one would almost suspect mastoiditis, again facial neuralgia, again ethmoiditis, and, lastly, all the

symptoms of confined suppuration of the maxillary sinus. Yet when the attack was over and the acute inflammatory symptoms had subsided, there was such an absence of any symptoms that it was impossible to locate any special diseased area.

An interesting feature of the case was the x-ray burn which resulted in our endeavors to locate the foreign body. Twenty-four hours after the x-ray picture had been taken an acute dermatitis developed on the right side of the face. The hair came out in handfuls extending almost to the median line. Later on the skin blistered and peeled off. There was no bad effect systemically from this burn, and to-day, curiously enough, the portion of the head on which the burn extended is covered with hair again, although it is short, being only two or three inches in length.

The history of the case, as given by the patient and the physician in attendance, is as follows: The first attack occurred in the latter part of January, 1887, and lasted for nine weeks. The beginning of the attack was rather curious. There was a sensation of something crawling, not on the scalp but underneath, that seemed to extend from the back of the neck forward over the top of the head. This was followed by considerable swelling and severe pain. The attack continued for nine weeks, and sometimes from the pain and extreme swelling the patient would become almost comatose. During this time the patient gave birth to a month's fœtus.

The symptoms gradually lessened after about nine weeks, until they would almost entirely disappear, but for three years, or until 1890, the patient would have repeated attacks, although not quite so severe as the attacks which occurred in 1887. The swelling, which was at first largely in the back of the head, with each attack traveled farther forward, and the tenderness and swelling over the mastoid region were quite pronounced. During all this time the patient, who was considered hysterical, described the sensation as that of something crawling underneath the scalp, and insisted that on each attack that peculiar sensation extended farther forward. In 1890 another severe attack occurred in which the swelling and tenderness over the mastoid were so pronounced that a diagnosis of acute mastoiditis was made. The patient refused an operation at that time. In a few

days the symptoms gradually abated until all the swelling and tenderness disappeared. From 1890 to 1895 no severe attacks occurred, but there was continually present that peculiar crawling sensation. Another curious symptom was this: Frequently, and especially when the peculiar crawling sensation was aggravated, there was a profuse sweating from the scalp and the skin of the face,

Fig. 1.

which did not occur in any other part of the body. This was a peculiar pasty, sticky material. The same material was discharged from each ear.

In December, 1898, an acute attack occurred. The peculiar sensation of which the patient had complained all these years had finally reached the forehead. The attack which occurred in December, from the symptoms

given by the patient and the physician, was almost identical with the confined suppuration of the frontal sinus. There was considerable external swelling, besides the dull, boring pain which is almost characteristic of a confined suppuration. Without any surgical interference there was a profuse discharge of pus from the nostrils, which gave almost immediate relief to the patient. Shortly after the first discharge of pus the patient, in freeing the nostril by rather forcible blowing, felt some hard substance in her handkerchief. On examination, she found a small piece of needle, about one half of a needle, as it afterward proved. In a few days the discharge cleared up, and the patient was free from any discomfort. The portion of needle which was discharged at that time, unfortunately, the patient did not keep, but the doctor and three members of the family who saw the piece of needle all agreed in their statement as to the size and discoloration of the needle. The surface of the needle was not roughened, but was simply oxidized. After the discharge of this portion of the needle the peculiar crawling sensation ceased.

When I first saw the patient, on August 23, 1899, there was a pronounced swelling on the right side of the face, reaching the antrum and up into the orbit, and at the base of the nose. There was marked tenderness on pressure, and the patient suffered severe pain, the pain at times being so severe that opiates had to be administered. At the time she was under the care of Dr. Lawrence Simcox, of Wissahickon. He had attended her through several previous attacks. There was considerable discharge from the nostril, although it was nothing more than would have followed a severe cold. Examination of the nasal cavities revealed nothing. Transillumination of the accessory cavities also gave negative results. I therefore hesitated to use any surgical interference on account of the previous history, similar swellings having occurred elsewhere about the face and head. This attack subsided and the patient was fairly free from pain for some three weeks, when another attack as severe as the former occurred. It was then that, while I did not attach much importance to the history of the discharge of the piece of needle, as a last resort it occurred to me that possibly there was a foreign body somewhere in the cranial cavity that was setting up this curious chain of symptoms. The patient consented to have an x-ray picture taken. It was with considerable difficulty that we seemed to outline the foreign body, the picture which I present being the best of a number taken. However, we

felt satisfied that there was a foreign body present. The second x-ray picture showed a slight difference in its location, as is shown in the photograph.

Granting that the x-ray picture was true, we decided to explore the antrum. It was impossible to determine whether this black line shown by the x-ray picture, which we believed to be the foreign body, or needle, was within

Fig. 2.

the antrum or in the bony posterior wall, or anterior wall of the antrum, or even outside of the antrum. The exploratory opening was made into the antrum and the whole antral surface explored, not only with the probe, but with the electric magnet. Dr. William M. Sweet, who has had great success in the removal of foreign bodies from the eye with the Hirshberg magnet, was present and used the instrument. Once or twice he was

positive that the instrument was attracted to some metallic substance, but he was unable to locate it. As we could find nothing in the antrum, and did not know the positive location of the foreign body, we decided to do no further cutting, but, if possible, to locate with the x-ray the exact position of the needle, which we now believed to

FIG. 3.

be there. A few days after the operation there appeared, just about a quarter of an inch back of the opening which I had made into the antrum, which was in the canine fossa, a swelling which looked much like an ordinary gum boil. This continued for a day or two, when it opened and, on examination by the patient's husband, at the suggestion of the patient that the boil had ruptured and that there was something causing considerable pain,

he discovered projecting from the tissue the point of this needle. Catching it with a pair of ordinary scissors he withdrew the body, and here it is.

The patient made a rapid recovery, and since that time has had no return of the symptoms, and is in perfect health to-day.

How the needle entered nobody knows. What course it pursued we cannot tell, but it is reasonable to suppose that the chain of symptoms was produced by the moving body. I have made a careful search of the literature and I do not find any similar case reported. We all meet with curious and unexplainable cases, and I have reported this case hoping that possibly it might be a help to some of us from a standpoint of diagnosis, as I frankly confess it was a most puzzling case to me, and it was with little faith that I started in search for that portion of the needle.

The x-ray prints are not so clear as they should be, or so clear as is shown on the negative. The case also shows the value of the x-ray as a diagnostic aid.

Discussion.

Dr. LANGMAID: Dr. Kyle has referred to a case; the specimen I have here in a bottle. The specimen was extracted whole, but became broken. My case was similar in many respects to the one described by Dr. Kyle. I described what I thought was a granulation tumor on the walls of the pharynx, extending over the arytænoids and preventing a view of the glottis. This pin (specimen) was in the larynx, having been sucked in three months before I saw the patient. Its length is of interest because it is one of the old-fashioned brass pins, such as we rarely see nowadays. The patient was a cashier in a factory and had used this pin to fasten money together. Dr. Knight happened to be in my office when the patient came in. By means of escharotics I picked off the tumor, and after a time I could see the larynx, but the left side was swollen. The arytænoid and the ventricular band were swollen so that I could not see the cord at all. The woman was much emaciated, having lost eight or ten pounds, and was afraid of tuberculosis. At the end of three months more she came back to me with a black spot on the ventricular band. In

another week I was able to see the point of the pin, and then made a diagnosis of a foreign body. With reference to the extraction of these foreign bodies, Dr. Kyle said that one should use strong instruments and be careful to extract the foreign body at the first attempt. In my case, the first time I put the forceps on it was not strong enough. It yielded and I was not able to extract the body. I then applied a more powerful forceps and succeeded in extracting the pin. This case occurred in my practice in 1889, and a full account of it will be found in our *Transactions.* It was the second case I had had. I simply referred to the first case because of the remarks of Dr. de Roaldes as to the exact situation of these foreign bodies. The first case was that of a little girl who had accidentally put into her mouth a pin which had slipped down into the throat. I was called by the family physician and found the pin in the side of the larynx. What Dr. de Roaldes has said in regard to the manner in which the pin gets into the larynx may be true in many cases, but it would seem that this method would not have been applicable to my own case. Here, the pharynx was perforated by the head of the pin and, in the act of swallowing, it was gradually carried farther into the tissues, this process being continued until it was fairly embedded in the cellular tissue behind the back wall of the pharynx. By the further act of swallowing, rotation took place with the head of the pin down.

Dr. THRASHER: I desire to emphasize the advantages which are to be derived from one of the manipulations referred to by Dr. de Roaldes in the removal of these foreign bodies, namely, the introduction of the finger into the vestibule of the larynx for the purpose of assisting in the removal of the object. I had occasion a number of years ago to remove a pin that had been embedded in the larynx for a number of years. The patient was a child. The child was very refractory, but under the influence of chloroform I could with perfect ease touch the foreign body with the tip of my finger, and with the aid of a forceps its removal was easily accomplished. Fortunately, in this case the head of the pin had fallen beneath the epiglottis, the point having transfixed the posterior portion of the right arytæno-epiglottic fold. Foreign bodies in the ventricle of the larynx or above the vocal cords can be touched by the point of the index finger and valuable assistance derived in this way. I am very glad to know that some one else has taken advantage of this little manipulation,

and it might have been used as a diagnostic measure in the case I had. No one had been able to see the pin in my case or to determine that a pin was there, except possibly a very skilled laryngologist (?) in a neighboring city, who said that he had discovered it in the right apex of the lung with the aid of the microscope! The presence of prolonged coughing and the fact that the case was rapidly passing into what was considered consumption induced the parents finally to bring the child to me.

Dr. J. E. Boylan, of Cincinnati, Ohio: The surprising difficulty at times experienced in extracting pins from the larynx, referred to by the author, recalls to my mind an experience of my own. In my case the pin was not within the larynx, but deeply embedded in the fold between the base of the tongue and the epiglottis, and very effectually hidden, so that it could only be seen with the laryngoscope when the tongue was well drawn out. The symptoms were referable to the larynx and for this reason it escaped observation for quite a while during inspection. About one third of the point end of the pin had penetrated the lateral glosso-epiglottidean fold, while the head was pressed deep into the median fold—so that about a third of the pin was visible, lying transversely in the recess at the base of the tongue on the right side. The only suitably curved forceps that I happened to have at hand was a large and rather clumsy œsophageal one, and yet even that slipped, to my surprise, when traction was made in an effort to dislodge the pin. At the next attempt the point of the pin was pushed still farther into the issue by a lateral bolt-like movement, which disengaged the head from the median fold, after which the extraction was very simple.

Dr. F. Peyer Porcher, of Charleston, S. C.: I wish to lay stress on the necessity of having a good forceps for the extraction of these foreign bodies. It has been my fortune to remove two pins from the larynx within the last few months, and I find that Schroetter's tube forceps, as made by Hajek, of Vienna, is most excellent for that purpose. Most of us who have studied under Schroetter will remember old Frau Gelly, who used to permit the students to insert a china bead into her larynx and extract it for a small pecuniary consideration. It was here that I learned the use of this forceps. Of course, thorough cocainization of the larynx is necessary to control the spasm, but in very young subjects the removal of these foreign bodies would at best be difficult to accomplish. With your permis-

sion, I will take this opportunity to show a fish-bone which I took out of a patient's throat. There is nothing remarkable about this bone except the vicious character of it. As will be seen, it consists of two spines connected by a thin lamella of bone in the shape of a triangle. The apex of the triangle was sucked down into the throat and the two spines were buried in the laryngeal mucous membrane, so that the sharp edge of the lamella was the only thing visible in the mirror. I examined the man for half an hour before I could detect anything at all, and then I saw what looked like a crack in the glass, but the crack moved, so that I knew it must be a foreign body. The alligator grip of the forceps readily took hold of it, and it was easily extracted.

Dr. T. M. Murray, of Washington, D. C.: I have seen two cases of pins in the larynx, although one of them was really not in the larynx when first seen, but was sticking in the lower part of the pharynx with the head down. I found some difficulty in removing it. The forceps, though strong, slipped, dropping the pin into the larynx. Its removal was successfully accomplished in the second effort.

Dr. Simpson: Our experience with foreign bodies or pins in the larynx is sometimes discouraging, and it is well for us at the outset to be careful not to let the forceps slip. We must be sure of the location of the foreign body, having the larynx thoroughly cocainized, and we should be able, if possible, to extract it the first time. A very valuable little point is to try the forceps one is about to use upon a pin or needle before introducing it into the larynx, giving it all the pulling one possibly can, to see whether it will slip or not. I believe in these cases we should use a sharp-end forceps. The ordinary rough forceps will slip. It is surprising what sharp forceps can be used on a pin or needle without breaking it. I prefer the use of Schroeder's tube-forceps.

Dr. Casselberry: In reference to the use of the x-ray and the burn that was produced, I should like to ask Dr. Kyle as to the time of exposure, and whether these burns may possibly be avoided by shorter exposures.

Dr. de Roaldes: I should like to say, first, that it seems to be pretty well admitted that the removal of pins from the larynx, especially if embedded, is not so easy as it may seem. The great trouble is that we do not always know the exact position of the pin, and particularly the relative position of the point to the head.

In answer to Dr. Langmaid, I should say that in the majority of cases reported the head of the pin was lower than the point, seeming to indicate that generally the pin slips down head foremost, as a result of its original position between the teeth or lips with the head in the mouth and the point externally, for fear of pricking the tissues, or, again, as a result of an inversion of the pin in its descent by an adaptation of its centre of gravity. On the contrary, if the pin is inhaled with its point foremost, the latter is very apt to become stuck in the tissues, with the head upward. Furthermore, we must remember that the position at first occupied by the pin in the larynx may be materially modified by the spasmodic contraction of the parts. In one case the observer mentions that the pin was seen at first with its head resting against the posterior surface of the epiglottis and the point pricking slightly the interarytænoid tissues. Nothing was done for a few hours, but subsequently the patient was examined again, and it was found that the head had been pushed backward by the epiglottis, and that the pin had transfixed the soft parts. With reference to the use of cocaine preparatory to the extraction of these foreign bodies, I deem it the anæsthetic *par excellence* in adults and in docile patients, in whom the parts are not too irritated or swollen. This anæsthetic, however, will be found more than once disappointing in children, especially in cases of long standing, in which the pin is embedded in inflamed or swollen tissues and there exist constant pricking sensations in the throat, with abundant secretions. Under these conditions, cocainization is a real operative act, which, as a result of fear, or of actual pain, is strongly resisted by the little patient. In such cases general anæsthesia is preferable, particularly if, as is sometimes indicated, one has to make use of the index finger of the left hand to steady the larynx while the right hand holds the pin in a firm grasp of the forceps.

Dr. KYLE: In reply to the question of Dr. Casselberry as to the time of exposure in this case, I will say that Dr. Prince had charge of the x-ray apparatus during this exposure in which a burn was produced, and I do not recall the exact time of the exposure. I believe that it is not so much the long exposure that produces a burn as it is the peculiar idiosyncrasy of the individual. Some patients have been exposed almost an hour, with no burns whatever. I know that the exposure in this particular case was much shorter than in some of the others, so that I do not believe the time of exposure has much to do with it.

Paper.

WERE THESE UNUSUAL CASES OF PARTIAL PARALYSIS OF THE VOCAL BANDS CAUSED BY OVER-USE OF THE TELEPHONE?

By CLARENCE C. RICE, M. D.

I PREFER to put the title of my paper in the form of an interrogation because there exists some uncertainty regarding the ætiology of my cases. The two reasons for the selection of this subject are to call to your attention a somewhat novel cause of vocal disability, and to ascertain if other members of this association have noted injurious effects upon the vocal apparatus from a faulty use of the telephone. The two patients whose cases I shall present for your consideration have given so clear a history of the cause of their vocal trouble that I can have but little doubt that their dysphonia was occasioned both by a foolish manner of using the telephone and by its over-use. It is not hard to believe that the nervous strain which some people seem to undergo when employing the telephone constantly, can easily have a most injurious effect, not only on the general nervous system, but on the hearing as well. It would be interesting to learn from aurists whether injury to the auditory nerves has been frequently noted in this connection. We all hear of and see persons who allow themselves to become nervously excited and exhausted when using the telephone, and such strain would be likely after a time to produce some degree of exhaustion of the auditory nerves and possibly of the recurrent nerves, by reason of central irritation. It does not seem amiss to note the large possibility that an incessant use of the telephone, harassed as the operator in large towns must frequently be by frequent interruptions, by failures to transmit the desired message, or by poor service, is an additional cause in the production of "American neurasthenia." The family physician, I learn, often has occasion to advise nervous

patients not to use the telephone at all, and I know several instances in which men have finally, by reason of increasing nervousness, delegated their telephone work to other people. Although we have no special data on the subject, because they are very difficult to obtain, we should believe that the nervous strain, particularly upon the women who are employed at central offices, would be very great. This general nervous exhaustion, as I have said, may account for the impaired power of the vocal muscles through the medium of central causes, although a dysphonia due to over-use of the voice would be more likely to be peripheral in its origin.

Both my patients were men, one about forty-five and the other about fifty-five years of age. Both were actively engaged in business, one in life insurance, and in constant communication with people in town and out of town through the medium of the telephone; the other, the local manager of a realty company, told me that he used the telephone from morning until night. This latter patient was under weight, and so nervous that his physician had ordered him to take a long vacation, which, for business reasons, he had not felt that he was able to do. The older patient, on the contrary, was over-stout, in fair general condition, and had all the enthusiasm which seems to go with the life insurance business. Both these patients came to the office about the same time during the past winter, and the questions at their first visit developed the interesting fact that they both felt that the persistence of their partial loss of voice had principally been occasioned by the over-use of the telephone. Both had been in the habit of using a transmitter which rested upon the desk, and bending the chin well down on the chest, a position which makes the neck rigid and must interfere somewhat with the nerve and blood supply of the upper respiratory tract. Of course this position in using the telephone was not necessary, and harm would have been much less likely if the operator had used the telephone when standing, or had held the head in such a position that the neck had not been compressed. The laryngeal lesions in the two patients were quite different.

In the case of the thin, nervous man, the vocal bands, while showing sufficient power to approximate in a general way, had lost their ability to straighten out and come in contact with each other throughout three quarters of their entire length. The thyreo-arytænoid muscles were evidently completely fatigued. In addition to this lack of straightening power, the large lateral muscles evinced great lack of sustaining power, for, unless the patient made special efforts, the arytænoid cartilages fell apart directly after they had met. During the utterance of any sound the vocal bands trembled as any tired muscle would do. This condition clearly demonstrated partial loss of power of the lateral adductors and almost entire inability of the thyreo-arytænoid, or straightening, muscles. The voice was very uneven. For a moment it was almost natural, but he would quickly become hoarse or voiceless. He was sometimes able to speak with fair clearness by pitching his voice considerably lower than in his ordinary conversational tone. His hoarseness had been present for nearly two months. No other cause than the bad manner of using the telephone, or its overuse, could be found to explain this vocal disability. The muscular weakness was bi-lateral. There was very little if any catarrhal change in the laryngeal cavity. This patient had never been a singer or public speaker, and had not used his voice in a trying way, except in the way I have indicated. There was nothing in his history to predispose to this lack of vocal power, except his condition of general neurasthenia.

There is no special object in presenting to this association a picture of this form of impaired vocal power, except to call your attention to its causation, because it is the ordinary one of inability to straighten the vocal cords, associated with the common symptom of vocal fatigue. The wide opening throughout nearly the entire length of the vocal cords during phonation was in the form of a very much compressed ellipse. I do not know that I can add anything else of significance to the history of this case. The patient believed as I did that peripheral nerve tire and muscular fatigue had been caused by

the telephone work at his office. His recovery was slow and unsatisfactory. He remained away from the office for a part of each week and did not use the telephone. The use of nerve tonics and electricity aided the straightening power of the vocal cords, but just when we felt that the voice was returning there would again be a long period of hoarseness and unnatural voice. After the use of electricity several weeks, as the straightening power of the cords increased, the lack of tension, which had not been apparent in the first laryngeal picture, showed itself in rapid and ludicrous changes in pitch, the voice suddenly changing from a medium bass to a high soprano. I am unable to report the progress in this case, as the patient decided to leave his business for a long period of rest.

In the case of my second patient, the older, stouter man, whose nervous system seemed to be pretty nearly normal, I was not able to trace the cause of his impairment of voice to the use of the telephone so definitely as in the first instance. In this case the laryngeal lesion was confined to the right side, and, while the voice was always husky, it was never lost altogether. There was only fair adduction on the affected side; the edge of the cord was always straight, but lack of tension was pronounced. There was less width of the right cord as compared with the left, due partly to the lesser motion and partly to the somewhat slight overhanging congestion on the right side of the larynx. The patient stated that he believed that the trouble had been produced on the right side by the fact that he had been in the habit of compressing his neck on this side as he sat at his desk and used the telephone. This was the first time he had ever had trouble with his voice, and I could find no constitutional condition which accounted for the loss of power, nor was there any local catarrhal condition which explained the impairment of voice. He was instructed not to use his voice above a whisper, and this, with the use of electricity, quickly improved his voice and restored it to almost its natural power, but slight hoarseness remained for a long time. It seemed to me that in this

instance long-continued and severe compression of the neck on the right side had produced both peripheral nerve and muscular changes which had resulted in partial loss of the power of adduction and tension.

I trust that this association will not feel that these cases are too trivial for presentation here. The character of the partial paralysis seemed to me so peculiar in its ætiology, and so easily traced to the over-use of the telephone, that it would seem to be important that we should recognize the possibility of vocal fatigue from this rather new source. We know of course that a person can use the telephone without injury or fatigue if it is properly used. We always notice that operators at the central offices are careful to speak with as little exertion as possible, in a monotone, and probably never expend the nervous energy which was employed in both the cases cited.

The peculiar features of the partial paralysis in the two cases which I have presented were in the first case the long continuance of that form of vocal disability which usually remains but a few days after severe muscular strain. We have seen it frequently in shouting students, campaign speakers, and outdoor singers, but the fatigue usually quickly repairs itself. In my first patient the muscular strain had been so severe and so long-continued that it is a question whether a perfect recovery will ever be effected. The immediate falling apart of the arytænoid cartilages at the second of contact is not usually noticed except in severe cases of strain, and the trembling of the vocal bands is a rare feature.

In the second case the sluggish movement of the right vocal band was similar to that seen in cases of partial ankylosis of the arytænoid cartilage. But here the arytænoid was normal. Apparently the frequent and severe compression of the neck on the right side had been sufficient to cause a chronic passive congestion, with some degree of thickening of tissue, which explained the lack of power and the vocal disorder on the right side.

If we believe that the faulty use of the telephone or its over-use is competent to produce the laryngeal affections

described in this paper, it is easy to prevent them by warning patients not to become nervously exhausted by using the telephone too much, and not to employ it in such a manner as to injure the vocal nerves and muscles.

Discussion.

Dr. Samuel W. Langmaid, of Boston: We are greatly indebted to Dr. Rice for calling our attention to this subject. I have never been able to ascribe such trouble to the use of the telephone. I do not recall any such case whatever, and it is possible that this cause has in many instances been overlooked. I think his clear description of the latent condition of the larynx is worth calling attention to.

Dr. T. Amory De Blois, of Boston: It might be pertinent in this connection, as I did not hear all of the paper, to speak of a case which I saw last winter at the hospital. A man slipped down from a ladder, striking on the bottom rung on the back of the head. As a result, the muscles of the larynx were very much compressed. He had marked hoarseness and inability to approximate the vocal cords for several weeks. This condition passed off with rest. I attributed this to sudden muscular strain.

Dr. William E. Casselberry, of Chicago: I have no recollection of any cases in which the telephone itself could be assigned as the cause of paralysis of the vocal cords; but I recollect distinctly a case in which similar conditions produced paresis of the vocal cords, which subsided when the conditions were modified. The case was that of a clergyman who spoke with frequency, and had the habit when preaching of getting into a high state of nervous excitement, so much so that his voice would mount into a high falsetto key, which was evidently a great strain upon the vocal organs and a disagreeable feature to his audience. After some years of this method of preaching he appeared for treatment with marked paresis of the vocal cords, such as was described in the second case reported by the author. His voice had become so weak that he could preach only with great difficulty. There was paresis of both vocal cords, but it was more marked upon the right than the left side. I explained to him the nature of his difficulty, pointed out its serious character, and urged him to modify his method of preaching. First, I prescribed absolute rest

for a time, then a modification in his method of preaching, and urged him to avoid the nervous excitement into which he threw himself while preaching, and to maintain a low, composed tone of voice. This he has since practised with persistence and success as regards both the pleasant character of his speaking and the alleviation of his laryngeal paresis.

Dr. JAMES E. NEWCOMB, of New York: I have had one or two cases of telephone girls who came to me with slight ear troubles. They get along as well as they think they should, considering the nature of their business. You will remember that the transmitter is hung directly before them, so that they sit back in a chair with perfect ease, and in talking assume almost an ideal position for the muscles of the neck, so that the expenditure of force is no greater than is absolutely necessary. Then, too, we have all noticed that, in conversing with the central office, the speakers say no more than is absolutely necessary.

Paper.

ANGEIOMA CYSTICUM OF THE NOSE.

BY HENRY LEWIS WAGNER, M. D., Ph. D.

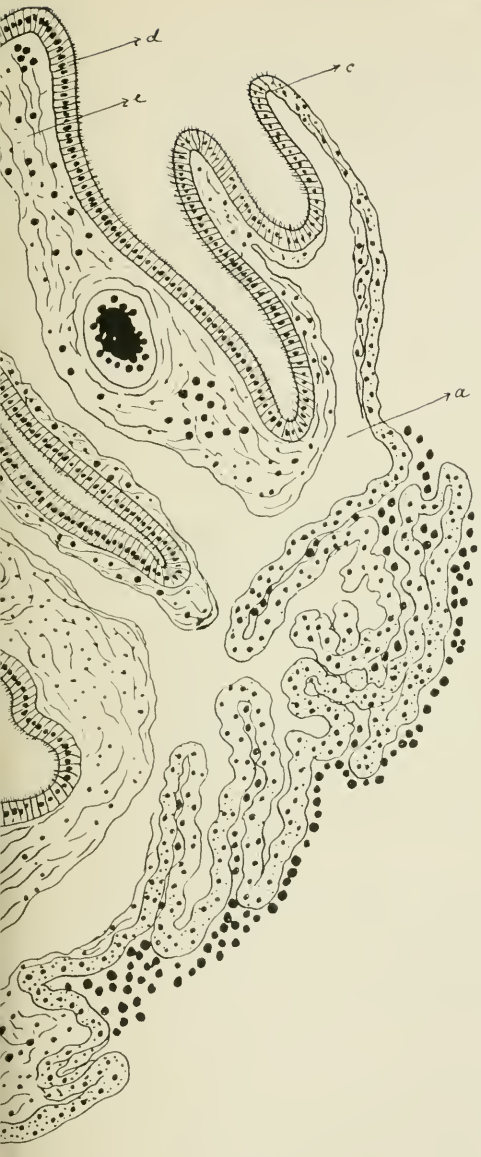
IN rhinopathology we have not yet a distinct classification of the different varieties of cysts. It has been my aim for some time past to study these new growths. To-day I shall describe to you only one class of cysts, the angeioma cysticum, of which I have observed but two cases in the last fourteen years.

This form of cyst differs from others not only from a histological (regarding its structure), but also from a chemical point of view (referring to its contents); it is rare and has been observed, according to their description, only by a few others (Potter, Lublinski, *et al.*), who named it cystoma, or retention cyst.

My own cases were observed and studied in a boy nine years old and in a woman twenty-eight years old. Both presented practically the same conditions, and I shall give you, therefore, only a brief *résumé* of the analytical results obtained.

Macroscopical.—The nasal passages present no other

The larger of the black round dots represent erythr
are slightly exaggerated as regards their diamet
black solid spaces are blood-clots. The fine d
ones represent the nuclei. *a*, interior of the
nar epithelium; *e*, connective tissue; *f*, fibro



ones are nuclei of the connective tissue. The erythrocytes distinction may be made between them and the nuclei. The s epithelium represent shading of the tissue; the larger nus; *c*, beginning of squamous epithelium; *d*, ciliated colum-

pathological condition than a single bluish-gray tumor obstructing the entire posterior portion of one side of the nose and protruding somewhat into the nasopharyngeal vault. The touch with a probe—one of the most valuable instruments for rhinodiagnostic purposes—is very characteristic; this tumor shows a greater elasticity of its outer walls than any other found within these limits, such as an ordinary myxoma or myxofibroma. It is very movable and attached to a small base apparently a little distance below the foramen sphenopalatinum, where the sphenopalatine artery and vein enter the nasal cavity.

During and after extirpation of the tumor a light brownish fluid escaped, leaving a very thin collapsed sac of a sausage form; the fluid was collected for chemical analysis. If the seat of the cyst is not thoroughly destroyed, as by the galvanocautery, it will very rapidly form again. Owing to this, I had the good opportunity in one case of gathering a sufficient amount of this cyst fluid for chemical research.

Microscopical.—In the sections of the cyst walls diametrically cut (see drawing) we observe a ciliated columnar epithelium covering nearly the whole external part of the growth, with the exception of a certain portion, which consists of squamous epithelium (produced either by pressure or by continuation of the mother-stratum). No glands are to be found in any of the sections, but a large number of venous blood-vessels, some of them enlarged, running parallel with the sac; also some large venous sinuses are seen. As the venous blood-vessels and cavernous sinuses constitute the principal elements of this cyst wall, I have therefore termed this growth *angeioma cysticum.*

Chemical Analysis of the Cyst Fluid.—The specific gravity is somewhat lower than that of blood serum and has an alkaline reaction; the brown color is partly due to lutein (lipochrom) and partly to a derivative of hæmoglobin. Serum albumin was found in larger quantities in comparison with metaglobulin and paraglobulin, which were present only in small quantities. Neither

mucin, paramucin, albumoses, peptones, leucocytes, nor cholesterin crystals were found; only a few red blood-corpuscles were detected, which caused in a very short time, when exposed to the air, a coagulation of the whole fluid. This cyst fluid represents a blood transudate, and we might therefore name this tumor also a *serous cyst* (from a physiologicochemical point of view).

Paper.

CYST OF THE VOCAL CORD.

By J. PAYSON CLARK, M. D.

This case is reported because it differs from the usual description of cysts of the larynx and in its general characteristics, before operation, rather suggested a fibroma.

B. K., male, aged twenty-five, a clerk by occupation, came to the Throat Clinic of the Massachusetts General Hospital in July, 1899, complaining of hoarseness and difficulty in speaking, the voice getting easily tired. He began to be hoarse twelve years before and had gradually become worse. Two years ago he began to notice the sensation of something in the larynx. His general health is fair. He has never had any serious illness, but has never been robust. He has no cough. Family history is good, with no record of any laryngeal or pulmonary troubles.

Examination of the larynx reveals considerable reddening of the vocal cords except at the middle of the right cord, above the surface of which projects an oval, smooth, grayish-white, pearly swelling, occupying a quarter to a third of the length and the whole width of the cord and causing a bulging of the free border (Fig. 1).

On introducing Schroetter forceps and attempting to grasp the growth (having first thoroughly cocainized the larynx), it was found so firm and resistant that the forceps slipped off without grasping it. At the suggestion of a colleague that it might be a cyst, I introduced a concealed laryngeal knife and incised the tumor near the free border of the cord. On removing the knife it was seen to be covered by a milky-looking fluid, and, on again looking at the larynx, the tumor or cyst, as it proved to

be, had entirely disappeared. A microscopical examination of the contents of the cyst showed a mass of degenerated epithelial cells and a few leucocytes.

The patient was seen again about nine months after the operation. The redness of the vocal cords had almost

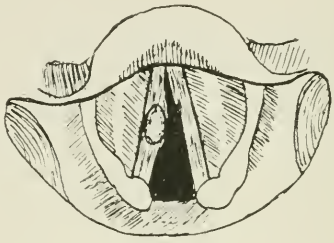


Fig. 1. .

disappeared. There were two minute knobs of mucous membrane projecting from the free edge of the vocal cord (Fig. 2). The patient has no difficulty in talking and his voice is fairly clear.

Speaking of cysts of the larynx, Bosworth says: "A cystoma is a small, soft, compressible growth, usually pedunculated. . . . The character of the growth is easily determined by the probe, or by its collapsing on seizure with the forceps." Lennox Browne says they are "generally red in color with surrounding hyperæmia." McBride mentions only one case which he has seen. He

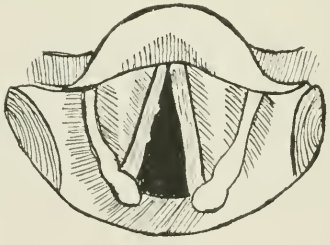


Fig. 2.

speaks of the tense look, peculiar opaque translucency and globular shape of the cyst in his case. The growth collapsed on grasping with Mackenzie forceps. This description more nearly approaches the appearance of the cyst in my case. The sessile character and great firmness of the cyst in this case was, no doubt, due to its being rather deeply situated in the substance of the cord.

References.

Bosworth, *Diseases of the Nose and Throat*, Vol. ii, p. 729.

Browne, *Burnett's System of Diseases of the Ear*, etc., Vol. ii, p. 759.

McBride, *Diseases of the Throat, Nose, and Ear*, p. 152.

Paper.

TRACHEAL INJECTIONS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

By T. MORRIS MURRAY, M. D.,

I HAVE brought the subject of intratracheal injections before you in a preliminary report of the work now being done in my clinic at the Central Dispensary and Emergency Hospital. A. T. Modestoff, of St. Petersburg, was, I think, the first to put the intratracheal method of introducing remedies into the human organism upon a scientific basis. He maintained, as the result of many experiments upon dogs, that remedies so introduced penetrated to the farthest limits of the respiratory space. In 1888, we hear from Garrel, Boteq, and others advocating the intratracheal administration of creosote in cases of pulmonary tuberculosis. In 1889 Downie, of Glasgow, read a most interesting paper before the Medical and Chirurgical Society upon this subject. The injection used by him was twelve per cent. of menthol and two per cent. of creosote dissolved in olive oil. Of this as much as two drachms was injected at a sitting daily. He says that "out of forty cases so treated, all expressed feelings of benefit in several ways."

In describing the results of his treatment he observes that the patients breathe more freely, and where tightness or a feeling of constriction about the chest is complained of, this is rapidly relieved by the menthol injection. There is less inclination to cough.

"The patients at the infirmary say that they cough

none at all for from four to eight hours after the injection, and if it be given at bedtime many whose sleep was previously much interfered with by the frequent recurring of cough rest the whole night long without once coughing. The expectoration becomes greatly reduced in quantity and much less offensive. In several of the cases the purulent element entirely disappeared, and what little expectoration continued to be discharged resembled the frothy expectoration of simple bronchitis. There was marked increase in weight in most of the patients thus treated." I have quoted Dr. Downie at length because his is the best exposition of the subject that I have seen and accords so nearly with my own experience.

The most recent contribution to the subject comes from Dr. Mundell, of Roubaix, who has substituted the essential oils for the usual creosote and menthol. The solution selected by him, after experiment, is the following:

Essence of thyme.....	5	grammes;
Essence of eucalyptus.....	5	"
Essence of cinnamon.....	5	"
Sterilized olive oil.....	100	c. ctm.

Of this he injects three cubic centimetres three or four times consecutively. The results reported by him, which were most satisfactory, have been to some extent confirmed by my own cases.

The method of administering intratracheal injection is simple; the curved cannula of the syringe is passed between the vocal cords, and the fluid is slowly injected into the trachea. The syringe which I have employed is the Schadel syringe. The usual effect in a majority of cases is a slight explosive cough. I have not seen a single instance of glottic spasm follow even the first injection. Out of thirteen cases treated during the past seven months with the Mundell solution, all but three have been decidedly benefited, their cough and expectoration have been lessened, and their temperature has been lowered. These patients were not in the hospital, and could only

be seen three or four times a week, and were very poor, with all which that means in the way of environment.

The advantage of the intratracheal injection over the usual methods of treatment in tuberculosis lies in the fact that the antiseptics used enter at once the field of their labors unaltered and penetrate to the farthest limit of the respiratory space, and, coming in immediate contact with the toxines as they are generated, bring about the beneficial results described without interfering with the digestive organs.

While I do not undertake to reach a conclusion as to the full value of this treatment in cases of tuberculosis, I think it can be fairly said that it does lessen the cough and expectoration, lower the temperature, and improve the general condition of the patient.

Discussion.

Dr. William E. Casselberry, of Chicago: I have had some experience with tracheal injections in the treatment of pulmonary tuberculosis, laryngeal tuberculosis, laryngeal irritation, and bronchial inflammation of various types. As regards the technique of the procedure, it is perfectly feasible, especially with the use of a preliminary brief application by spray of a one- or one-half-per-cent. cocaine solution to the larynx. Patients tolerate the procedure very well indeed after the first or second treatment. They readily become accustomed to it, and the quantity of material that one can introduce into the larynx and trachea without much coughing and expulsion is sometimes astonishing. If we use oil as a menstruum, the material gravitates down the trachea and into the larger bronchial tubes, and possibly in some cases it may reach the smaller bronchial tubes. That there are suitable cases of tuberculosis, associated with secondary infection leading to profuse expectoration, with a good deal of laryngeal and tracheal irritation, which may be benefited by periods of treatment of this sort, there can be no doubt, as the reader of the paper has said, because it lessens the cough, reduces the fever, and conduces generally to the comfort of the patient. But I have no confidence whatever in it as a specific treatment for pulmonary tuberculosis. I think it is stating the case too strongly to maintain that there

is much benefit from this method in the long run in cases of pulmonary tuberculosis. From our understanding of the pathology of tuberculosis of the lung, it does not seem plausible that either deep spraying of the bronchial tract or injections of this material can have much effect upon the tuberculous infiltration itself in the lung tissue.

Dr. J. Solis-Cohen, of Philadelphia: I have had considerable experience in the use of tracheal injections, dating back nearly forty years. I have had what is known as the Tobold syringe in my possession for nearly that length of time, but I have not always used the solutions that have been referred to. I can also testify that this treatment gives comfort in many cases. Persons with pulmonary tuberculosis feel a sense of comfort in the entire chest after this treatment, and the odor from the menthol is perceptible for a considerable time. I find the most marked benefit from this treatment in an entirely different condition, namely, bronchorrhœa. I believe it is the best remedy to use in this condition. You can use two or three injections twice, one after the other, and direct your applications to one side or the other. If you find that the remedy passes more into one side than the other, you can modify this. You will find in a short time that the secretion will be diminished by forty, fifty, seventy-five, or eighty per cent.

Dr. J. E. Logan, of Kansas City: I wish to corroborate what Dr. Casselberry has said with reference to this treatment in pulmonary tuberculosis. I have used tracheal injections with a good deal of success in certain forms of pulmonary diseases, but my experience has not been favorable in the treatment of phthisis. However, my experience in these cases has been limited, and I can understand how it might be possible to afford tuberculous patients great relief at certain stages of the disease. The best results I have had have come from its use in treating cases of bronchitis and bronchorrhœa attended by asthmatic symptoms, and also patients suffering from hay asthma.

I recall a case treated some three years ago, one of bronchiectasis, in which I had a good result. The patient is well, and at least comfortable, at the present time. In cases of bronchorrhœa with excessive secretion, I believe the local application of medicines to the part is apt to be more beneficial than the roundabout way we have of administering them through the general system.

Dr. A. W. DE ROALDÈS, of New Orleans: I have also had some little experience with these tracheal injections. In the treatment of tuberculosis of the lower air-passages and of pulmonary consumption, beyond a slight temporary improvement, as in the case of other new medications, I cannot say that I have obtained sufficient material benefit to justify me in adopting this method as a standard form of therapeutics.

I recall a case, however, of a very prominent man whose ill health was for several years attributed by different observers to pulmonary consumption, while he himself attributed his sickness to chronic malarial toxæmia. Emaciated and weak, he complained of fever, cough, expectoration, etc. The microscope and a closer study of the symptoms finally cleared up the case, which was diagnosticated as one of bronchiectasis and treated by me with these tracheal injections. The improvement was a surprising one, as after eight or ten injections the patient acknowledged he had not felt so well in many years. These injections had a manifest effect on the temperature, cough, and expectoration, and were instrumental in happily modifying these symptoms, at different periods of his illness, of which he finally died ten years later.

Dr. MURRAY: In replying to some of the remarks of Dr. Casselberry, I would state distinctly that I do not wish to be understood as having intended to convey the impression that I expected to cure patients who had tuberculosis with intratracheal injections. I do think, however, that if we can reduce the temperature in these cases, if we can lessen the cough so that the patient's rest is not disturbed, if we can increase the appetite, we certainly have a valuable aid to any other treatment which may offer possible curative results, particularly the climatic treatment.

With reference to the influence exerted upon these cases described by Dr. Roaldès and Dr. Logan, my own experience has been exactly the same. My results have been best in cases of bronchorrhœa. One of my cases, which I did not mention in the paper, treated as a case of tuberculosis at first, was such a case. The patient's condition was wretched. Examination disclosed what was supposed to be an involvement of the left apex, but, inasmuch as the man got entirely well, and the microscope did not confirm the diagnosis, I excluded his case from this list.

Paper.

THE CORRECTION OF THE DEVIATIONS OF THE NASAL SÆPTUM, WITH SPECIAL REFERENCE TO THE USE OF THE AUTHOR'S FENESTRATED COMMINUTING FORCEPS.

By JOHN O. ROE, M. D.

The importance of a normal nasal sæptum in the human economy is so uniformly recognized that various writers have been led to discuss the subject, and many operators have devised different methods for the correction of the numerous deformities to which the sæptum is subject.

Nearly every one of these methods is found to possess some merit and to have advantages over others in certain particular cases or conditions, but the method that has proved most efficient in the hands of the writer does not seem to be clearly understood by the majority of operators, and I therefore take this opportunity to explain its many merits and advantages.

It should be distinctly understood at the outset that no one method is equal to all the requirements of every case, for the deformities of the sæptum are so infinitely varied that such a claim for any one method would be as absurd as it would be to attempt to make one tool or implement do every kind of mechanical work.

Classification.—To classify all the numerous malformations to which the sæptum is liable is well nigh impossible. The frequent designation of different deflections of the sæptum by the terms "zigzag," "sigmoid," "letter S," "angular," "ridged," "bowed," etc., which apply to the shape of the deflection alone, are quite inadequate, for they simply describe the conformation of the deflection, without reference to its location, whether it be in the cartilaginous or osseous portion.

The only classification, therefore, which, from an anatomical standpoint, is at all satisfactory, is that

made with reference to the anatomy of the sæptum as first proposed by Jarvis. According to this classification, therefore, we have: First, deviations of the osseous portion—that is, the perpendicular plate of the ethmoid and vomer, either alone or combined; secondly, deviations of the cartilaginous portion—that is, the triangular cartilage; and, thirdly, a deviation of the osseo-cartilaginous portion, comprising the anterior part of the perpendicular plate of the ethmoid and the posterior part of the triangular cartilage, the anterior superior portion of the vomer and the lower border of the tri-

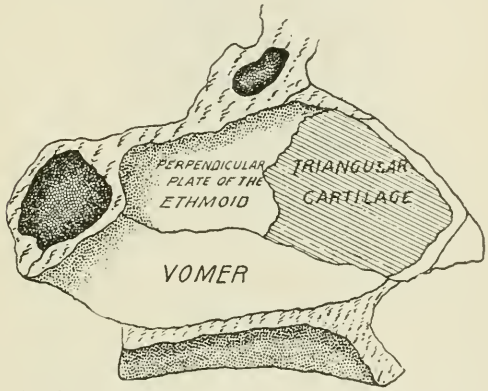


FIG. 1.—Showing the component parts of the sæptum.

angular cartilage, the region where these different portions are joined (Fig. 1).

Figs. 2, 3, and 4 are diagrammatic illustrations of a horizontal section through the centre of the sæptum, the length of the osseous and cartilaginous portion being at this point about equal. If the section were through the lower border of the sæptum it would be almost entirely bony, owing to the forward prolongation of the anterior portion of the vomer. In some instances there may be a combined deviation of the entire sæptum, termed "bowed sæptum" (Fig. 5), when it describes one long curve, both vertically and anteroposteriorly, from one end to the other. Other classifications, therefore, need not be considered. Such conditions as exostoses (Fig. 6) or encondromas (Fig. 7), located on one side

of the sæptum only, which give the sæptum on that side the appearance of being deflected, demand attention here

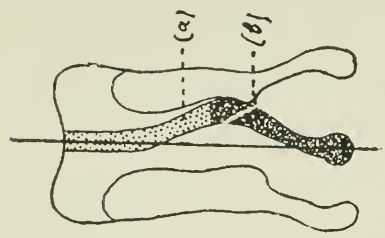


FIG. 4.—Deviation of the osseocartilaginous portion.

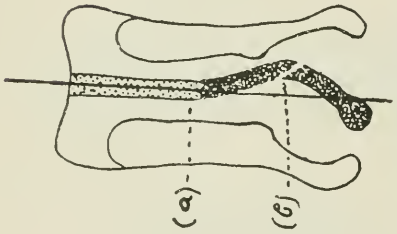


FIG. 3.—Deviation of the triangular cartilage with dislocation at its columnar attachment.

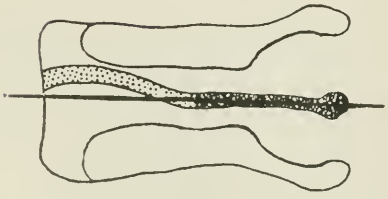


FIG. 2.—Deviation of the posterior portion of the vomer.

(*a*) (*a*) The osseous portion to be fractured in changing the direction of the deflection of the cartilage. (*b*) (*b*) The oblique line of incision through the cartilage.

only when associated with deviations of the sæptum requiring correction.

Frequency with which Different Portions are Deviated.—With reference to the frequency with which these

different portions of the sæptum become distorted, it is found that the posterior part of the osseous portion is but rarely deviated alone; and even when occurring in connection with that of the other portions of the sæptum, it is found in only about five per cent. of cases.

Next in frequency comes the deviation of the carti-

FIG. 5.—Deviation termed bowed sæptum.

laginous portion alone, found in about twenty per cent. of cases; whereas the osseo-cartilaginous portion (the junction of the perpendicular plate of the ethmoid or of the vomer with the triangular cartilage) is found deviated in about seventy-five per cent. of the cases coming under observation. Twenty per cent. is a very liberal es-

FIG. 6.—Illustrating exostosis of the sæptum.

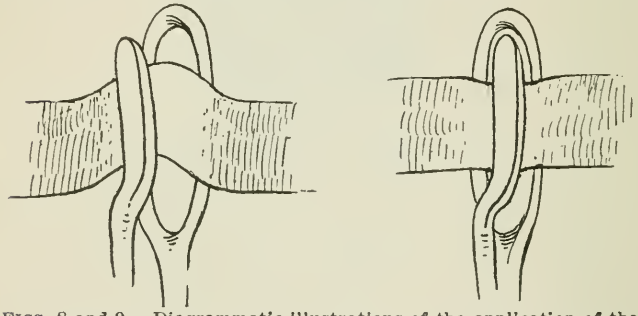
FIG. 7.—Illustrating ecchondroma of the sæptum.

timate for the frequency of the deviation of the triangular cartilage alone; for when the deviation is confined to the anterior half of the sæptum, the anterior portion of the perpendicular plate of the ethmoid and of the vomer are in most cases deviated with it.

Thus it is readily seen that a method adapted for

the correction of deviations of the cartilaginous portion of the sæptum alone should be employed in but twenty per cent. of the cases, while a method specially adapted for the correction of deviations of both the osseous and osseo-cartilaginous portions is required in eighty per cent. of all deviations of the nasal sæptum.

The Writer's Method and the Principles on which it is Based.—The method which the writer has found to meet these requirements is one which he has employed for ten years, and which he presented before this association nine years ago.* It is one that meets the different requirements in the greatest number of cases, needing, in a limited number of cases only, to be sup-



FIGS. 8 and 9.—Diagrammatic illustrations of the application of the principle of the fenestrated forceps in fracturing a deviated sæptum.

plemented by other methods or by the use of special instruments suited to deal with certain particular and localized conditions.

This method is based on the principles of a force being applied to one side of the sæptum, indenting it between two opposing points of resistance placed on the opposite side, as illustrated diagrammatically in Figs. 8 and 9.

Description of the Instrument and Method of Using It.—The application of the foregoing principle to deviations of the sæptum is made by means of a fenestrated forceps, one blade of which is made in the form of an ovate ring, termed the "ring, or female blade," and the other made in the form of a long, narrow, rounded blade,

termed the "single, or male, blade" (Fig. 10); the latter fitting loosely into the former, so as not to unduly compress or lacerate the sæptum. The blades are attached to the handle by a curved neck, or stem, sufficiently long to pass around the frenum of the nostril

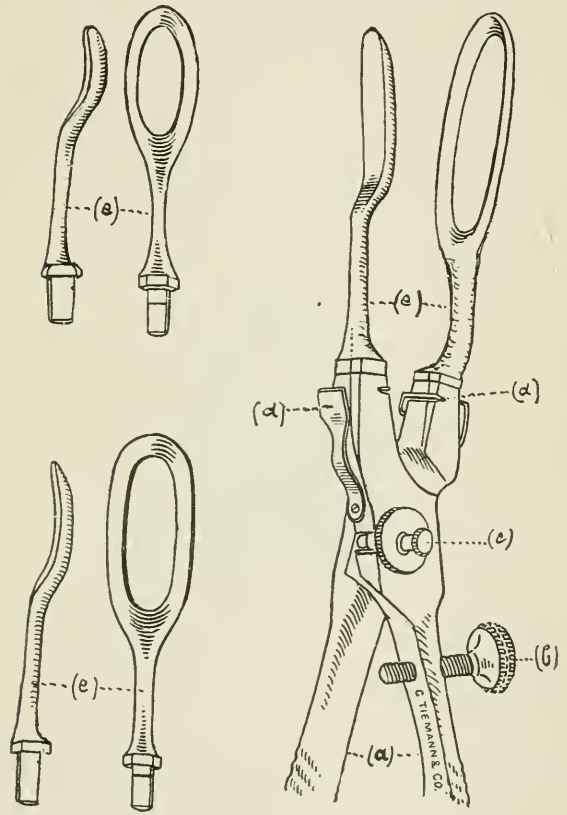


FIG. 10.—Showing the various parts of the instrument. (*a*) the handles with blades attached; (*b*) the set screw for regulating the adjustment of the blades; (*c*) lock permitting the handles to be detached from each other; (*d*) (*d*) spring catch for holding the blades firmly in the handle; (*e*) (*e*) (*e*) blades of different sizes that fit into the handle.

so as to avoid compressing it when the force of the blade is applied to the sæptum. The forceps is made with blades of different sizes to meet the requirement of different-sized nasal passages or sæptum, or deflections, as the case may be.†

On straightening a deviated sæptum, the male blade is inserted into the nostril on the convex side of the deflection and the ring blade on the opposite side (Fig. 11), when, by closing the blades, the deflected portion is crowded into and partly through the opening far enough to forcibly indent the central portion and fracture it without disturbing or bringing a strain on other portions of the sæptum. The distance to which the single blade is forced into the ring blade is governed by a set screw in the handle, and the extent to which it should be allowed to pass into the ring blade is governed by the thickness of the sæptum, the position and degree of the deflection, and the size of the blades employed.

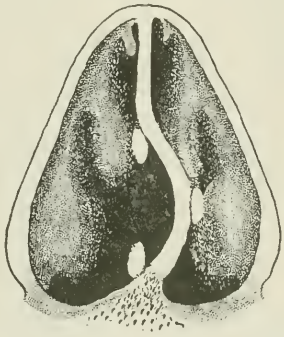


FIG. 11.—Showing in outline the position of the blades in fracturing the sæptum.

In straightening a deviated sæptum, no matter if the deflection is confined to the cartilaginous portion alone, it is of the utmost importance that the bone at, or adjacent to, the attachment of the cartilage be fractured. By so doing, the change in the direction of the attachment of the cartilage is made in the bone (*a, a,* Figs. 3 and 4), so that, so soon as the fractured bone is reunited and becomes firm, it permanently holds the cartilage in its new position. With this point made clear, the superiority of the ring forceps over the flat-bladed forceps, like Adams's forceps, must at once be apparent.

With flat-bladed forceps it is only possible, except by twisting the blades, to bring the bend in the sæptum up to the median line, which never suffices to fracture the

cartilage, and but seldom the bone, and then only when the bend in the bone is so great, and the blade of the forceps sufficiently wide, to bring a large amount of force to bear at the centre of the angle. As it is only by twisting the forceps that a fracture of the bone can be brought about, it is readily seen that, the moment the blade is twisted, the septum must either be lacerated or loosened at its attachment, to accommodate the greater distance of the line through the centre between the blades; whereas, by means of the fenestrated forceps, very little force is required and no strain is brought to bear on adjacent portions of the septum, and the line of the contour of the deflection is made shorter by having the angle or bent portion crowded into the fenestrated blade, as illustrated diagrammatically in Figs. 8 and 9.

By this method, therefore, the well-known dangers recognized as attending the fracture of the vomer by flat-bladed forceps (like the Adams forceps, which requires twisting and wringing of the forceps, causing laceration of the parts, possibly disturbance of the upper attachments of the perpendicular plate of the ethmoid, and brain complications) are avoided. By this method, also, by the selection of proper-sized blades, the fracturing of the septum can be limited to the deflected portion only, or to any part desired, without disturbing the other portions of the septum.

This method, while especially adapted, as I have said, for the correction of deviation of the osseous and osseocartilaginous portions, is also of service in cases of moderate deviations of the cartilaginous portion alone, by simply fracturing the adjacent bone around the deviated cartilage and forcing the central deflection of the cartilage into the fenestrated blade. With this instrument, also, the cartilage can usually be fractured sufficiently to overcome the elasticity without the necessity of incising or lacerating it, and this can be accomplished by no other method with which I am acquainted. Then, by holding the septum in position by a support placed in the previously occluded side for a few days, until sufficient inflammatory exudate has been thrown out or

ossification of the fractured bone has taken place, so as to maintain the angle of the deflection in its new and straightened position, the necessity of maintaining a support to the sæptum for a considerable time, until the resistance or elasticity is overcome by prolonged pressure, as generally advocated, is avoided.

Providing for Redundancy.—It is self-evident that a deflected sæptum is larger or wider and longer and has a greater extent of surface than a straight one. But, on straightening the sæptum, much of this redundancy of the cartilaginous portion can be accommodated by the mobility and flexibility of the cartilaginous portion of the dorsum of the nose and of the lower portion bounded

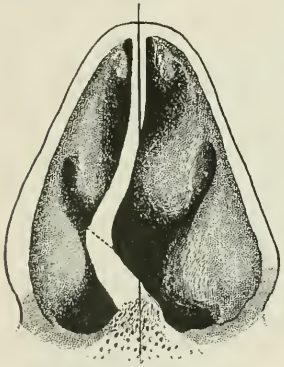


FIG. 12.—Showing the oblique incision longitudinally through the cartilage.

FIG. 13.—Showing coaptation of the cut surfaces after the sæptum has been straightened.

by the frenum; whereas, in the osseous portion, the redundancy is accommodated by the impaction and crowding together of the fragments, if sufficiently comminuted by the forceps. When, however, the bend in the cartilaginous portion is large, it is not only advisable, but often necessary, to provide for the redundancy by incising the cartilage in order to allow the severed portions to slide past each other.

Methods of Incising the Cartilage to Provide for Redundancy.—The method of incising the sæptum that has given me the most satisfactory results, is by making the incisions oblique, so that the ends of the fragments

will slide past each other like two wedges (Figs. 12 and 13), and at the same time permit a portion of the cut surfaces to remain in apposition for union to take place.

The greater the redundancy, and the more acute

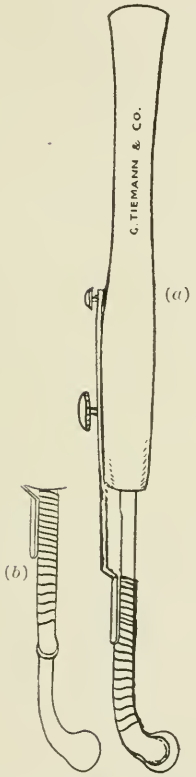


FIG. 14.—(*a*) Nasal cartilage, knife having a shield for regulating the depth of the incision when it is not desired to cut entirely through the sæptum; (*b*) shield thrown back when not required.

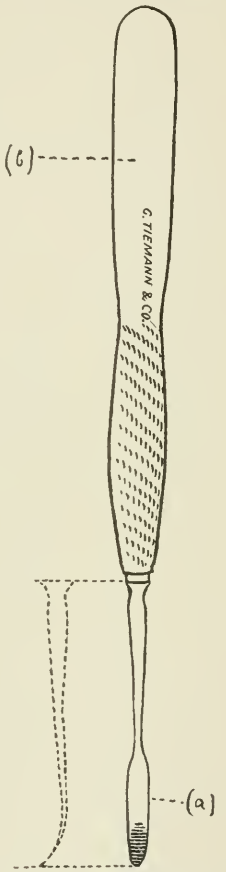


FIG. 15.—Perichondrium elevator and sæptum spatula combined. (*a*) Perichondrium elevator; (*b*) Sæptum spatula for putting the sæptum in line after the use of the forceps.

the angle of deflection, the greater will be the lapping at the end, and, accordingly, the incision should be correspondingly more oblique, to permit the proper coaptation of the cut surfaces. When the deflection is hori-

zontal, forming a ridge on one side and a corresponding groove on the opposite side, the incision should be horizontal only. When this groove and ridge run up and down through the centre of the cartilage, the incision should be vertical; but when the deflection consists of the combination of a vertical and a horizontal bend, so as to make it somewhat conical, as if a pressure had been applied at one point, indenting the sæptum, the incision should be both vertical and horizontal (*a, a* and *b, b,* Fig. 16), and each should be made through the sæptum obliquely and along the direction of the axis of the greatest bend or convexity. The incision of the cartilage should be made from the convex side with a small nasal cartilage knife (Fig. 14), with the finger in the opposite side, or in free nostril, for a guide. In order to make the incision oblique, the use of the knife is necessary, for with cutting scissors it is possible only to make the incision at right angles to the plane of the sæptum.

On making the incision, if it is to be horizontal, the knife should be passed in carefully to the further point of the convexity and the cut made on drawing the knife forward; if a vertical incision is to be made, the knife should enter at the upper portion of the bend and the cut be made downward. In many cases it is necessary only to make the incision through the cartilage to the under side of the perichondrium on the other side. This can be done very readily with the finger on the opposite side of the sæptum, when, by the careful use of the knife, the approach of the blade can at once be detected as it passes through the cartilage. The perichondrium can then be raised for a short distance from each inner edge of the cut surfaces sufficiently to allow the upper fragment to slide under. This can very readily be done with a small elevator made for that purpose, as represented in Fig. 15 (*a*), which is passed through the incision and directed by the finger in the free nostril. In other cases, when the deflection is moderate in degree and it is desired only to change the directions of the angle or to overcome the resistance or elasticity of the cartilage, the elevation of the perichondrium is unnecessary.

In this way a wound of the mucous membrane in the concave side of the sæptum is avoided, obviating the necessity of obstructing the nostril with any form of dressing, as the support of the fragments is maintained entirely from the previously obstructed side.

Before the incisions are made, the sæptum should be carefully explored to ascertain the amount of thickening, and whether ridges, spurs, or adhesions, are present, requiring removal, before the straightening is undertaken. This can be much facilitated by the use of suprarenal extract and cocaine. Frequently, and especially if the turbinated bodies are enlarged or the sæptum so much deflected as to obscure the vision of the convex side, the use of a small nasal sound, or of the sæptometer, will be required. Frequently, however, the most accurate information can be obtained by exploration with the finger, which, if well oiled, is readily introduced into the concave side, and the yielding nature of the cartilage and turbinated bodies will permit the little finger to be crowded well into the convex or occluded side.

In some cases the nature of the deflection may be such that all the spurs or ridges on the cartilaginous or bony portion cannot be readily removed before the operation. In such cases the sæptum can be straightened first and any irregularities that may remain removed afterwards.

The Operation for Straightening the Sæptum.— After the preliminary operations for excrescences or redundancies have been performed and any necessary incision made, the fenestrated forceps, with blades of suitable size, is introduced, with the ring or female blade on the concave side of the sæptum, the male blade being very readily crowded into the obstructed nostril on the convex side (Fig. 11). The forceps is so constructed that the blades are separable like those of an obstetric forceps, which is readily locked after the blades have been introduced. When the blades are in proper position, the lower portion, or the junction of the cartilage with the anterior portion of the vomer, should be fractured; then the junction of the cartilage with the perpendicular

plate of the ethmoid, so that all the resistance or elasticity has been entirely overcome.

In the selection of the blades in each particular case, it should be made with reference to the size or length of the deflection. In some cases, however, the deflection in the osseo-cartilaginous portion will be very much greater than the size of the meatus, so that a ring blade large enough to cover the deflection cannot be introduced, in which case a portion of the deflection can be broken up at a time, the position of the forceps being changed, or different-sized blades selected according to the site of the part to be fractured (Fig. 16), and new

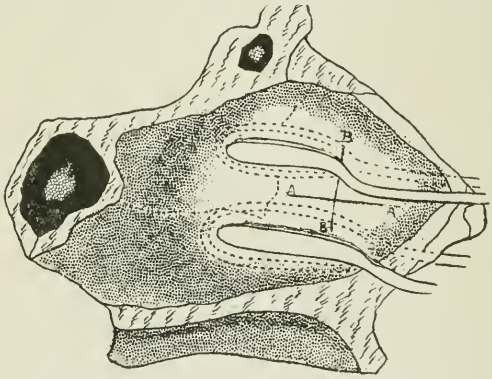


FIG. 16.—Showing the application of the forceps in fracturing different portions of the sæptum. *A A* and *B B*, horizontal and vertical incisions through the cartilaginous portion of the sæptum.

portions of the deflection grasped until the deflected portion has been sufficiently broken up and the elasticity removed to allow it to be placed in the median line.

In many cases there is a deflection or dislocation of the triangular cartilage at its attachment with the vomer, associated with a dislocation or deflected attachment of the vomer itself along the maxillary ridge. This can ordinarily be corrected by forcibly holding the forceps down to the floor of the nose, as shown in Fig. 17, and, by catching the lower portion of the ring blade over the stump of the maxillary ridge, a sufficient pressure can be brought by the single blade to fracture the attachment and set the sæptum over to its proper

position. In case ossification is too firm, the operation can be facilitated by loosening with the chisel or saw the bone at its lower attachment.

When there is a double deflection, forming a "zigzag," or "sigmoid," deflection, the centre of which is usually found along the line of the attachment of the triangular cartilage with the perpendicular plate of the ethmoid, it is necessary to reverse the blades of the forceps for the two sides, forcing one portion over in one direction and the other portion over in the opposite direction, as shown in Fig. 18. But, owing to the occasional

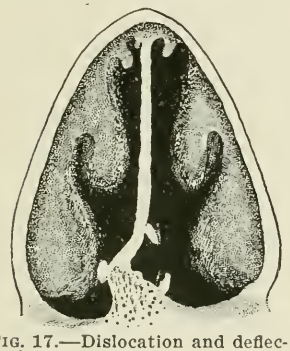


FIG. 17.—Dislocation and deflection along the maxillary ridge, and the application of the forceps in correcting it.

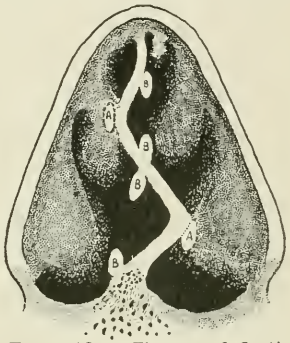


FIG. 18. — Zigzag deflection, showing how the forceps is reversed in correcting it.

difficulty in some cases of maintaining the parts in position after a double operation, it is frequently advisable to make each deflection a separate operation, the second one being performed when the parts are thoroughly fixed in place after the previous operation.

After the forceps is used, and before the dressing or support is introduced, the sæptum should be carefully explored with the small nasal spatula, as shown in Fig. 15 (*b*), or with the finger, to ascertain if all the elasticity of the fractured portion has been overcome. If any elasticity still remains, this should be overcome by the use of the forceps at the point of resistance.

When this has been accomplished, the sæptum should be put in the median line preparatory to the introduction of the dressing. For this purpose the nasal spatula

or perichondrium elevator is admirably adapted, although in many cases the flat-bladed Adams forceps, having parallel blades, is exceedingly serviceable for putting the fragments and the entire sæptum exactly in the median line.

Method of Dressing or Support.—Among the various devices for holding the sæptum in place, I have found no support so satisfactory, and at the same time so thoroughly aseptic, as a plug made of sterilized cotton or gauze wrapped around a small metal plate to give it firmness, and of the requisite size to fill the nostril comfortably. This is placed in the previously occluded nostril or the convex side toward which the sæptum has been deflected. In case there has been a double deflection, one should be placed on each side, opposite the point of previous convexity; the other nostril, or the formerly concave side, where no support is necessary, being left free for respiration.

The advantage of this form of support over the hard-rubber tube or the various other mechanical appliances that have been devised for this purpose, is that the nasal passages can be made and maintained thoroughly aseptic, which is impossible when these other appliances are used; and, moreover, the healing of the wound is not only more readily promoted, but the danger of erosion of the wound, thereby preventing healing and endangering hæmorrhage, is entirely avoided.

Simpson's Berney's compressed cotton tampons, if they have been sufficiently sublimated previously to compression to maintain them thoroughly aseptic, are an ideal dressing for this purpose; although care will have to be exercised lest too large a sponge be selected, that may, after becoming wet and expanded, force the sæptum over beyond the median line.

Preparation of the Parts for the Reception of the Dressing.—Before a dressing or support is introduced, and, in fact, before the operation is undertaken, the nasal passages should be thoroughly cleansed by syringing with a warm borated bichloride solution, 1 to 5,000, and after the operation has been performed they should

be again thoroughly cleansed with the same solution. The parts are then dried with sterilized cotton, dusted with an antiseptic powder, as iodoform or urophen, and the dressing introduced. The dressing, however, before introduction, is saturated with the bichloride solution, to which may be added a small amount of tannin to check any prolonged oozing of blood, which sometimes takes place when spurs have been removed and other cutting done preliminary to the operation of straightening the sæptum. If the nostril and the dressing have been made thoroughly aseptic and the dressing carefully and properly inserted, it can, if of cotton, be left *in situ* for from three to four days before removal. It can then very readily be removed without pain or discomfort by slightly dazing the patient with a few whiffs of chloroform. The nasal passage is then thoroughly irrigated with the bichloride solution, anæsthetized by cocaine, and a fresh plug similar to the previous one introduced. This is left *in situ* for two days longer and removed.

By this time the sæptum is usually self-supporting, sufficient provisional callus or inflammatory exudate having been thrown out to render the parts rigid enough to require no further support. It is, however, advisable to watch the sæptum, to see that there is no sagging back, necessitating further support for a few days longer. If it is necessary, a hard-rubber or aluminum tube can now be used to advantage. It should be entirely smooth and without perforation, which can serve no purpose except to afford a lodging-place for discharges to decompose in.

Local and General Anæsthesia.—In performing the operation for deviated sæptum in children, the use of general anæsthesia, preferably chloroform, is always necessary, and usually in timid adults also, although in many cases it can be performed by the use of local anæsthesia alone.

Usually, with adults, I do all the preliminary work under cocaine, aided by suprarenal extract, and then, with the whole sæptum thoroughly anæsthetized, a small amount of chloroform, a few whiffs, is given, just suffi-

cient to daze the patient while the fracturing is being done. For the other portions of the operation, chloroform is entirely unnecessary, and no pain or special discomfort should be experienced by the patient.

We may briefly summarize the *modus operandi* of straightening a deviated sæptum by this method as follows:

After the extent and position of the deflection has been clearly ascertained, the special plan of operation required in each particular case is determined upon. If we find in the passage on the concave side of the sæptum a greatly enlarged middle or inferior turbinated

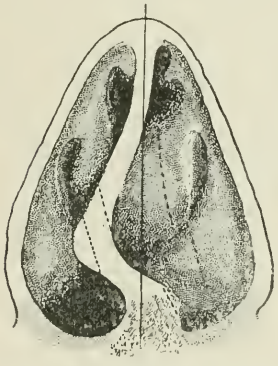


FIG. 19.—Exostosis and ecchondrosis at angles of deflection with enlarged turbinated bodies.

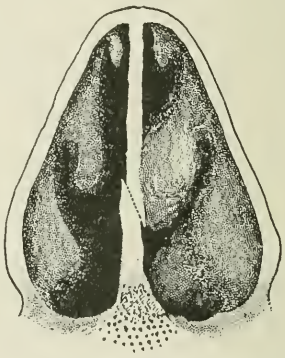


FIG. 20.—Showing transfer of obstruction by straightened sæptum in Fig. 19, if enlargement of turbinated bodies is not removed.

body, as we frequently do (Figs. 12 and 19), this should be reduced to its normal dimensions, and the parts healed, before the operation is undertaken; otherwise, we would simply transfer the nasal obstruction to the opposite side by straightening the sæptum, as shown in Fig. 20.

If we find an exostosis or an enchondroma (Fig. 19) at the angle of the deflection on the convex side, as we usually do, this should first be removed with a saw, trephine, or cartilage knife, as the case may require.

If the deflection is confined to the osseocartilaginous portion alone, or is associated with deviation of the car-

tilage, by fracturing the osseocartilaginous region, so as to change the angle of the attachment of the cartilage, and holding it in place until healed, the deformity can be readily corrected.

If the deviation is confined to the cartilage alone, by fracturing the osseocartilaginous portion it can readily be put in the median line.

If the deviation of the cartilage is concave or indented, fracturing or incising the cartilage itself may be necessary.

If moderate in amount, simply incising the cartilage from the convex side through the point of greatest convexity to the perichondrium on the opposite side, under the guidance of the finger in the free nostril, so as to destroy the elasticity of the cartilage, may be a sufficient supplement to the osseocartilaginous fracture.

If the deflection in the cartilage is so large that the redundancy must be provided for, more extensive incisions through the cartilage are necessary. These should be made obliquely, either entirely through the sæptum to permit the cut ends to slide past each other (Figs. 12, 13, 19, and 20), or only to the perichondrium (Fig. 21), which is raised from one edge for a distance sufficient to allow the other edge to slide under as the case may require.

With these preliminaries completed, the sæptum is fractured and put in the median line, the parts made aseptic, the dressing or support introduced, and the sæptum maintained in the median line until ossification and fixation of the parts have taken place.

If the operation has been carefully and properly performed and all elasticity or resistance at the seat of the deformity has been thoroughly overcome, a support for five or six days, until fixation of the parts by plastic exudate has taken place, is, in ordinary cases, all that is or should be required.

Later, when the sæptum has become firm and the healing process completed, any slight irregularities can be trimmed off, leaving the sæptum on both sides straight and smooth, without concavities or depressions

to serve as a lodging-place for mucus or other discharges.

Without detracting from the methods of others, which in many cases are admirable for the correction of the particular deformity to which they are specially adapted, I shall briefly summarize the special advan-

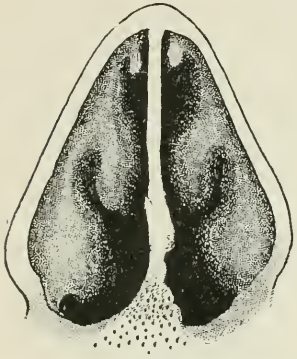


FIG. 21.—Showing bulging of mucous membrane after straightening the sæptum when the perichondrium has been raised at the time of the incision of the cartilage.

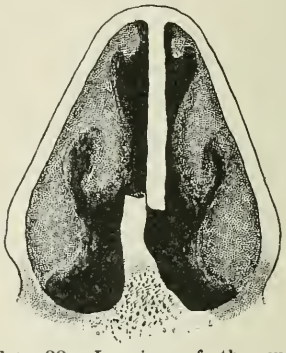


FIG. 22.—Lapping of the cut surfaces after straightening the sæptum when a right-angle incision had been made.

tages that can be claimed for the superiority of this method over other methods for the correction of the various deviations of the sæptum.

First. The facility and ease with which, in every instance, the osseous and osseocartilaginous portion of the sæptum can be fractured and all resistance removed without incising, or even lacerating, the sæptum, may be noted.

Secondly. By fracturing the anterior portion of the osseous sæptum and changing its direction by putting it in a straight line together with the cartilaginous portion, so that, when this osseous portion becomes reunited in its new position and firm ossification has taken place, the cartilaginous portion is firmly held in its new position. As osseous tissue does not readily bend, this must necessarily act as a firm post or support, to hold the cartilage in its new position, very much in the same manner as the direction of the hang of a

door is changed at its hinges, as illustrated in Figs. 3 and 4.

Thirdly. Moderate deflection of the cartilaginous portion of the sæptum can also be fractured with the forceps and the elasticity overcome, without the necessity of incising the cartilage.

Fourthly. By this instrument, wrinkles and curves can very readily be smoothed out, no additional operative measures being required, except for the removal of spurs and ridges or the breaking up of adhesions or attachments that may have previously formed.

Fifthly. By this method, dislocations of the triangular cartilage at its articulation with the vomer, or dislocations of the latter at its maxillary attachment, can very readily be reduced and the parts put in their normal position. By this method, also, except in rare cases, the extensive incisions proposed by different operators are obviated; such as crucial or rectangular incisions with cutting forceps; the horseshoe incisions through which the deflected portion is pushed, which cannot be of special service except in limited indented deviations of the triangular cartilage; or the separation and setting over of the base of the sæptum into the free nostril far enough to leave both nasal passages of equal calibre, which simply compensates for the bend in the sæptum, without straightening it after all.

Sixthly. In those cases in which incision through the cartilage is required to provide for the redundancy, the superiority of the oblique incision, which promotes coaptation of the cut surfaces, over the right-angled incision, which does not, is at once apparent (Fig. 22).

Finally. The superiority of the fenestrated forceps over the flat-bladed forceps or the fingers, as proposed by some operators, for breaking up of the base of the fragments at their bony attachments, is apparent. It also obviates bringing strain on the sæptum and disturbing its upper attachments, thus endangering brain complications, and by completely removing the elasticity of the attachments of the deflected parts, it facilitates

the more ready adjustment of the sæptum to its normal position and diminishes to a minimum the length of time a support to the sæptum is required.

**Transactions of the Thirteenth Annual Meeting of the American Laryngological Association*, 1891; also *Transactions of the Fifteenth Annual Meeting of the American Laryngological Association*, 1893, page 83.

† To simplify the instruments the necessary blades of different sizes are made separately and fitted to one handle, which George Tiemann & Co. have very admirably put up for me in one case, together with the other instruments to be used in connection therewith.

Discussion.

Dr. A. W. DE ROALDES, of New Orleans: I feel indebted to Dr. Roe for a clearer understanding of his method of correcting deviations of the nasal sæptum. There are still some points connected with the procedure which I should like explained—for instance, the exact location of the bony and cartilaginous hinge of which he speaks, whether it is vertical, and whether on this line of fracture hinges the whole anterior part of the deviated sæptum. If that is the case, I wish to say that Professor Moure, of Bordeaux, has lately adopted some similar procedure in what he will present shortly as a new method for the treatment of sæptal deviations. In a conversation with him a few months ago, and while he was questioning me on the methods of Dr. Roe and of Dr. Asch, he said he had procured the latter's instruments. Misconstruing the *modus operandi*, he had performed several operations in which, if I understood him well, he severed the sæptum in its whole thickness, along its attachment to the floor of the nose, from the columnar cartilage to the posterior chondro-osseous articulation, his next step being to incise the sæptum high up from the columna, backward in a direction parallel to the external median line of the nose. He thus obtained a truncated conical cartilaginous partition which, when fractured at its posterior attachment, allowed a displacement *in toto* of the deviated sæptum, with the idea of obtaining union of the fracture in a modified direction, calculated to correct the deviation. Good results were thus obtained by Dr. Moure, who, having designed two instruments to facilitate his technique, was kind enough to present them to me.

Dr. JONATHAN WRIGHT, of Brooklyn: Dr. Roe has

aroused so much admiration and, I must confess, a little despair in the minds of us all in describing the external deformities of the nose, that it is refreshing to be able to understand exactly what he means by operations upon the nasal sæptum. I have used with a great deal of benefit the form of forceps he has shown for breaking up the sæptum, but I have not used the form of cutting forceps which has been exhibited by Dr. Roe. In using one as large for breaking up the sæptum as the one which has been passed around, it would seem to me that we might dangerously fracture the whole sæptum. The small instrument is extremely useful for breaking up the cartilaginous portion of the sæptum. I have used the cutting forceps of Dr. Asch for making the incision, and have used the instruments of Dr. Roe for destroying the resiliency.

Dr. Roe: The blades inserted in the instrument passed around are longer than those commonly required in the correction of sæptal deformities. Since I first described this set of instruments I have abandoned the use of the cutting forceps, and have substituted the knife to which I have called attention in my paper.

Dr. W. K. Simpson, of New York: In drawing attention to the cartilaginous sæptum, I should like to know whether this instrument will fracture the sæptum. My experience in using a blunt instrument, no matter how powerful it may be, is that you can bend the sæptum to any extent you desire, but it will immediately slip back again, so that our ability to fracture it is limited.

Dr. Roe: A good deal depends upon the thickness of the sæptum.

Dr. Simpson: How long do you leave the retention splint in?

Dr. Roe: From four to six days, until a provisional callus is thrown out sufficient to hold the sæptum rigid and maintain it permanently in place.

Dr. Emil Mayer, of New York: I did not hear all of Dr. Roe's paper, but I gather from what has been said that his method consists in making an incision with the knife through the cartilaginous sæptum, a sort of sawbuck incision, and that by means of compression forceps he comminutes the parts and inserts a packing for several days, and then discharges the patient as well. I should like to ask whether he has observed any meningeal symptoms following this crushing and rolling motion? I say this because a great many operators fail to understand the Asch operation, and, instead of using compression forceps merely as compressors and nothing

else, make the mistake of using a rocking and rolling motion, and, although I have not seen any cases recorded, I have heard indirectly of two fatalities as a result of this particular rocking and rolling motion. Dr. Roe says that the difference between the incision made with the knife and that made with the scissors is that he makes an X-incision, while in the other instance the incision is rectangular. If one will follow closely what has been written on the subject and the descriptions by Asch and myself, he will see that the incision made with scissors is as nearly at right angles as possible; yet in three hundred cases of my own I do not believe a single one of them has been a right-angle incision. They are the sawbuck incisions. Regarding tubes, it is merely a question of how long compression should be made, or how long they should be worn. Perhaps I am responsible for the length of time (five weeks) that the tube should remain *in situ*. It may be possible that I shall experience a change in heart like Dr. Roe and leave my patients without tubes at the end of the third week. In one instance, where there was a tendency to perforation, I took the tube out at once, which I always do if there are indications of sloughing at the junction of the incision. This patient did well with the tube used occasionally for a few days, and at the end of the third week I discarded the tube altogether. The length of time the tube should be kept *in situ* is purely arbitrary. Regarding the packing of Dr. Roe, his method is identically that described by Dr. Asch in his first paper presented to this association. It was discarded as being very annoying to the patient and offensive also, and the tubes were substituted.

One point should be clearly understood, namely, the anatomical configuration of the sæptum itself. If we make an incision through the sæptum from above downward, we find that the portion of it on a line with the columnar cartilage broadens out; that is the normal condition of the sæptum. It is narrower near the external portion of the nose, and broader as it comes toward the skull. We have to do undoubtedly with a certain amount of thickening and enchondrosis in all deviations, hence the need of care of that portion after the tube is withdrawn.

Dr. Roe has unquestionably improved his method of operating on the cartilaginous sæptum so far that it is almost impossible to tell the difference, except in the manner of using particular instruments, between his operation and the one described by Dr. Asch.

Dr. Roe: For fear the members may be misled by

the remarks of Dr. Mayer, I would say that the incision of the sæptum is beveled and made at an angle, like this (indicating), about 45°, so that we have two edges sliding by each other like two wedges, whereas, if the cutting forceps is used, it is usually impossible to make a beveled cut. If the cut through the sæptum is made at right angles, and the ends are forced by each other, the cut surfaces do not come in contact at all, but the blunt edges override each other, affording no opportunity for union of any portion of such surfaces to take place. Dr. Mayer inquires if there are specific directions for making this incision. None, except that it is to be made through the most convex portion, whether the deviation or deflection is horizontal or oblique. If the deviation is a combination of the horizontal and oblique, frequently both a vertical and a horizontal incision should be made. If the line of convexity is oblique, you, of course, make the incision obliquely to correspond with the direction of the deflection.

Dr. MAYER: What is the length of the incision?

Dr. ROE: What is suited, in your judgment, to the requirements of the case. I have employed a modification of the operation which has been described in my external operations through the skin for many years, and have been surprised to find how slight the scars were after the operations. After the removal of tumors, sometimes the scars can hardly be seen after a few months. There is an advantage to be gained by having a beveled portion, in that it may become attached to the unbroken mucous membrane on the other side. I have not made a rectangular incision in these cases. If the instrument is inserted obliquely, we always have a beveled cut.

Dr. WILLIAM E. CASSELBERRY, of Chicago: I have used both the Asch scissors and a scalpel in making the incisions for deflection of the cartilaginous sæptum. Under general anæsthesia, the scissors seem to me more precise, especially for the second incision, when hæmorrhage is free. With cocaine anæsthesia only, a scalpel is best, because it is less bulky, permitting a view of the parts incised and greater delicacy of manipulation. To operate with cocaine anæsthesia requires a patient of reasonable self-possession and fortitude, but then it is entirely feasible and presents certain advantages as regards vision, position of the patient, and the control of hæmorrhage. I have used a double-edged scalpel with a sharp but rounded instead of pointed end. It is a convenient instrument with which to practise Roe's limited incisions —that is, cuts which pass through the mucoperichon-

drium of one side and the cartilage, but not through the mucoperichondrium of the other side, which in certain cases of moderate bulging deflection is an improvement on the Asch incisions, for the reason that there is less liability to permanent perforation after them. With the finger in the concave nostril, one can feel such a round-ended scalpel pass through the cartilage and approach the mucoperichondrium without cutting the latter and without injuring one's finger. If the bulge is extreme or the deflections angular, I have not considered these limited incisions fully adequate.

I was particularly pleased to hear the percentages given by Dr. Roe of cases in which the osseous portion of the sæptum was involved. I have heard Dr. Asch insist that his operation was intended only for cartilaginous deviations, and not for osseous deviations, and that he objected to fracturing the osseous portion of the sæptum as unsafe, particularly when the rolling motion of the forceps was used. My experience agrees with that of Dr. Roe as regards the large percentage of cases in which the bony parts are involved, and as to its being necessary to correct in some manner the bony deflection in order to secure a satisfactory result. I have used the forceps of Dr. Roe for compression of the sæptum, the smaller sizes being best adapted to the form of compression which he has so well described, in which the rolling motion is not used.

I should like to ask Dr. Mayer, who in a measure represents Dr. Asch, why it is necessary to make the arms of the crucial incision vertical and anteroposterior, or why it is not adequate to make both incisions slanting—that is, a saw-buck incision? I have found it difficult with the Asch forceps to make the incision exactly up and down, my incisions usually slanting more or less like a saw-buck. I should also like to ask Dr. Mayer whether he has seen any severe hæmorrhages in those cases in which he has used the tube immediately after the operation. I understand that he puts in a vulcanite tube at once, puts the patient to bed, applies ice-water cloths across the nose, and sprays with an iced alkaline solution. Having observed hæmorrhages in both ambulatory and hospital cases, I have preferred to pack both nostrils with antiseptic gauze as a first dressing, and introduce the tubes only at the end of from two to four days. I believe this precaution to be especially advisable in ambulatory cases.

Dr. J. Solis-Cohen, of Philadelphia: When I am called in to perform the Asch operation, I rarely leave

the tubes in more than six or seven days. I use tubes with perforations for the purpose of allowing any granulations to get through and hold the tube tight in place.

Dr. SIMPSON: In connection with the good result of the Asch operation, I have found another objection in addition to those that have been mentioned, and that is, where we need retention splints, we are sometimes unable to get the tubes on the floor of the nose, and my experience in a number of cases is that, when we come to remove a tube that we have inserted, we find the bottom part of it has made a new shelf for itself, which will necessitate removal subsequently. One of the conditions of success in the Asch operation is that the splint should be applied well down on to the floor of the nose, so as to avoid the secondary shelf to which I have referred.

Dr. MAYER: I shall be pleased to answer the questions that have been asked, because I think they are part and parcel of this question, and because I believe the new method Dr. Roe has demonstrated is practically the same, with some slight modifications, as has been referred to in the discussion. As regards the point mentioned by Dr. Simpson, which he referred to a moment ago, there may be an anatomical condition of the sæptum which will absolutely prevent the tube from resting positively upon the floor of the nose. With reference to the question of packing and of hæmorrhage, and in reply to Dr. Casselberry, I wish to say that I look upon these operations as operations of magnitude; I think that an anæsthetic is requisite, and that the patients should not be allowed to go out after the operation has been performed, but rather they should go to bed for at least three days. This point has been brought out very clearly in an interesting paper by Dr. Holmes, of Cincinnati, in which he reports over a thousand turbinotomies, without a single bleeding. He did not use the suprarenal extract, and he used no packing, but simply kept his patients in bed. In two hundred cases I have reported upon, which number includes those of Dr. Asch, Dr. Simpson, and myself, as well as some other surgeons in New York, in no single instance have we had to pack for hæmorrhage.

Dr. CASSELBERRY: I believe there have been two cases of severe hæmorrhage in patients that were put to bed.

Dr. MAYER: It is simply beyond my experience, and I cannot explain it except on the ground of some unusually placed blood-vessels or hæmophilia.

I wish to correct a mistake that has been made with reference to the Adams forceps as being in any way

similar to Asch's. I am very sorry I did not bring one with me, but it is like the old-fashioned nut-cracker, which simply opens and shuts like a pair of scissors.

As to the percentage of cases of deviation of the cartilaginous sæptum, it is not so great as it would seem to be. A large percentage of bony deviations require no interference whatever, and what we call the absolutely normal skull is comparatively rare.

As to why the incisions are crucial, I would say that it is just as Dr. Roe has stated, that in this particular form of operation it is a fundamental principle to make a crucial incision, for with it we make four segments whose bases are broken, so that we destroy the arch and in that way straighten the nose by making the four segments override each other.

Dr. CASSELBERRY: The question was not why the incisions were crucial, but why one arm crossed up and down directly and the other arm anteroposteriorly. In the Asch operation one arm must be vertical and the other arm horizontal.

Dr. MAYER: You cannot make a crucial incision unless you take these two directions (illustrating). You have to make the incision in accordance with the direction of the deviation.

I am aware that I am trespassing on time, but, at the risk of being a little tedious, I wish to say that much confusion has been caused by Asch himself in the presentation of the bent scissors. I think ninety-nine deviations of the cartilaginous sæptum out of a hundred can be corrected without using that instrument, and it is here that the confusion has occurred. You really need a right and a left knife with the bent scissors, and then it is applicable to only a few cases. These scissors were devised for our own use where we had so many different forms of deviations to contend with, and oftentimes the deviation was so low down on the floor of the nose that we were obliged to make the incision low down and anteriorly. As a matter of fact, the equipment of any rhinologist would be perfect without these bent scissors of Dr. Asch's, and a straight scissors can be used in practically every case.

So far as the question of perforation is concerned, we must admit the possibility of it in every case, and the secret of not having perforation occur is in carefully watching the case, removing the tube on its slightest indication, seeing the patient daily, cleansing the nose one's self, and using nosophen or some such stimulant until all is healed, when the tube is replaced.

Dr. Roe: I am glad that Dr. Casselberry agrees with me in regard to the percentage of deviations in different portions of the sæptum. Deviations of the cartilaginous portions of the sæptum alone occur only in about twenty-five per cent. of the cases, while nearly all other deviations are of a combined character, namely, of the osteocartilaginous portion of the sæptum. Therefore, the method which will properly correct the deviation must be one that is especially adapted to that form of deviation.

In regard to the observation of Dr. Mayer with reference to the Adams forceps, I do not see wherein the Asch forceps differs in principle materially from the Adams instrument. They both have perfectly flat blades, and in the use of either instrument for breaking the osseous portion of the sæptum it is necessary to twist or use a rotary motion, the danger of which is well recognized. By the method I have described, in which a fenestrated forceps is employed, no ringing or rotary motion is required, and no disturbance of any portion of the sæptum not included in the forceps is caused, because we have two supports on one side to counteract the pressure on the opposite side.

In regard to incising the cartilaginous portion of the sæptum, I am glad to know that Dr. Solis-Cohen has also found the slanting incision of special service. In many cases the incision can be carried through the cartilage only, leaving the perichondrium and mucous membrane on the opposite side intact. When the sæptum is thick, the perichondrium can at the same time be raised for a distance to allow the border of the opposite edge to slide under. In moderate bends of the sæptum this is unnecessary, but where the bend is large it is often of special service.

In regard to packing the nostril or supporting the sæptum, it is necessary to insert the dressing on the convex side only. Incision of the cartilage is, however, mainly required, as I have pointed out in my paper, where the deflection is confined to the cartilaginous portion of the sæptum, but when it is located in the osteocartilaginous portion the fenestrated forceps will usually bring the whole sæptum to the median line.

I have found the most efficient form of support to be a piece of aluminum wound with gauze, sufficiently large to fill the nostril and to force the sæptum over to the desired position. If the nostril and the dressing are made thoroughly aseptic, it can usually be left *in situ* for three or four days. It is then removed, the parts are thor-

oughly cleansed, and another one is introduced. This is left in place for two or three days longer. The sæptum is then carefully watched for a few hours to see if it is self-supporting. If ossification has taken place in the fractured bone, no further support is required. If there is a tendency to a return of the deviation when ossification has taken place, it is an indication that the elasticity of the sæptum has not been entirely overcome and that the operation has not been properly done.

My experience with the use of vulcanized rubber tubes for holding the sæptum in place has not been at all satisfactory, but I have used the dressings which I have described with great satisfaction, have never seen any hæmorrhage, and have observed no perforations of the sæptum to result from their use.

From the use of the fenestrated forceps I have had only the best results, and in no case has there followed cerebral disturbance of any kind, which I am sure might have taken place in many cases had I used the Adams forceps and broken the osseous portion of the sæptum as freely as I have done in a large number of cases by the method which I have described.

Paper.

THE SURGERY OF THE TURBINAL BODIES, WITH A NEW METHOD OF OPERATING.

By J. E. BOYLAN, M. D.

The method of dealing with hypertrophy and degenerative changes in the turbinated bodies—common as these conditions are, and fraught with dire consequences—is undoubtedly one of the most important, interesting and persistent problems which it is the task of our specialty to solve. I offer no apology, therefore, for reintroducing to you this familiar, though not trite, subject. Glancing back over very few years, we realize at once that the series of momentous observations made in turn by Virchow, Hack, Kölliker, Kohlrausch, Zuckerkandl, and Biglow not only have proved of absorbing interest to the physiologist and pathologist, but have been happily followed by triumphant practical results, in that thousands of patients to-day find relief from a

condition which, before the anatomy and function of the turbinated tissue were understood, remained a dreaded bugbear to the physician. But the great progress made in this short period, as well as the good results attained at times by very crude methods, only tends to strengthen the assumption that, far from being an exhausted field, this is one in which a comparison of methods is likely to lead to much better results in the future.

In days gone by, I have resorted to different procedures one by one, as they were developed by the rapid march of rhinology: Linear incision with the galvanocautery knife in soft hypertrophy; the use of chromic and the chloracetic acids; the more extensive surface reduction with the cautery blade, in excessive indurated hypertrophy, and in many instances the gradual reduction of the extremities of the bodies, from which the best results were obtained.

As time progressed, however, and the accumulation of cases afforded an opportunity of convincing myself of the preponderance of hypertrophy in certain regions, notably at the extremities, rather than in the central part of the bodies, I resorted with increasing frequency to the removal of larger segments of the excessive tissue by one smooth operation, and the results attained proved so satisfactory that I now give this procedure the first place in the treatment of this condition and believe that in the advanced hypertrophy so frequently associated with interference with the respiratory function the judicious amputation of portions of the turbinated bodies will be the operation of the future in rhinology.

In support of this postulate, let me recall that the hypertrophy in question, whether always originating in the erectile tissue or not, has its chief development in and about its walls, as the result of chronic engorgement, this being not a matter of theoretical conjecture, but a demonstrated fact, as the result of microscopic research, notably by our fellow, Dr. J. N. Mackenzie;* further, that the location, or at least the great preponderance of this tissue, is near the posterior and anterior extremities

and in less degree—in the lower part and along the free margin of the middle and lower turbinated bodies. Thus, Zuckerkandl,† who has made an exhaustive study of this tissue, states: "The autopsy has determined that in the engorgement of the turbinated bodies the posterior extremities are most increased in size, the middle part the least; this being easily explained when we consider that there is less need of erectile tissue upon the convex, protruding middle part of the body, than at the pointed (*zugespitzten*) extremities."

The conclusions following are drawn from 111 turbinotomies in private practice, and from clinical cases in which a record has been kept; 42 of which were examined at least one year after the date of the operation. The conclusions are: 1. That, while in exceptional cases involvement of the whole erectile-tissue area of the pendulous portion of the body may coexist, hypertrophy is usually greatest where this tissue is most abundant—namely, at the anterior and posterior extremities.

2. That the relief of obstruction and the reduction of hypertrophy in these cases is accomplished more certainly and scientifically by ablation than by cauterization.

3. That, while venous dilatation is greatest at the posterior extremities, obstruction is rarely due to hyperplasia at this point *alone*.

The reason for the prevalence of the erectile tissue in the region of the choanæ must be obvious, if we accept the proposition that it is part of Nature's plan to have the air pass in thin sheets between closely approximated walls for the warming and moistening process so essential to perfect respiration; the posterior opening, being not only quite straight, but widened to a lumen much larger than the narrow passage in the vestibule, naturally requires a larger supplement of erectile tissue to produce in this region the condition referred to, and it is owing to this free posterior opening that a greater degree of engorgement or hypertrophy may here exist without obstruction.

Without dwelling further on this phase of the sub-

ject, however, I pass to the consideration of the method of operating which it is the object of this paper to describe.

To deal as briefly as possible with statistics, in the cases above referred to, the lower part of the inferior turbinated body was removed throughout its entire length in three instances with the saw, and in twenty further cases sections embracing the anterior extremity, with the same instrument. In twenty-four cases turbinotomy of the lower or middle body was performed with the scissors, or with the saw and scissors together, and in sixty-four cases sections of varying size were removed with the cold snare.

The clean, smooth edge of the cut made by the transverse passage of the wire through the body, the small amount of hæmorrhage, and the possibility of following the loop with the eye quite to the point to be reached commended this latter method to me above the others, and the use of the saw and the scissors was in time restricted to cases in which excessive induration suggested an exceptionally thickened bone. If in any of these sixty-four cases the turbinated bone was ever seriously crushed with the loop, I have never been able to detect it, and have certainly never once known either an osteitis or any deformity to result. If the wire used is stiff and thin, and the snare powerful, the tissue is cut through smoothly and usually with ease.

A serious objection to this method, however, was the slipping forward of the loop over the medial surface and lower margin of the body, at times even after it had been inserted into a short incision dividing the anterior extremity of the body from the side wall, by which slipping either a complete failure to engage the tissue resulted or the amount removed was much less than had been intended. To prevent this accident, it occurred to me that the end of the loop might be fixed by burying the point of a fine tenaculum, the hook of which formed a right angle, into the lower margin of the turbinated body at the point of operation, carrying the loop over its handle into the meatus and adjusting it so that it passed

behind and was held in place by the back of the hook. This device, first tried upon the middle turbinated body, proved entirely successful, and has since been used with gratifying results in numerous cases. By means of it it is possible to entirely control the removal of the amount of tissue required, and, combined, if necessary, with the lateral incision above referred to, amputation can be done with accuracy as far back as the middle of the body. Finding that the point of the hook was at times caught in the loops, I afterward had this bent to an angle somewhat more acute than a right angle, and in operating it was tilted still farther forward by depressing the proximal end of the tenaculum. During the manipulation the snare should be pressed firmly backward and upward, so that the loop is drawn from above rather than from in front. The back of the hook is corrugated for the better retention of the loop.

The method just described was not applicable to cases in which the removal of the posterior extremities of the lower bodies was performed with the snare, this being usually accomplished by conjoined manipulation through the mouth—in two cases with great difficulty—twice under anæsthesia. The proportion of cases, however, in which obstruction rendered this operation imperative was surprisingly small—they numbered twelve.

In eighteen cases in which marked enlargement of the posterior extremities coexisted with causes of obstruction farther forward, such as polypi, hypertrophy at the anterior extremities, or of the lower margin of the body, and irregularities of the sæptum, the removal of the latter sufficed to restore the lumen of the passage, after which the posterior hypertrophy was no longer a source of serious annoyance, and in several instances receded rapidly under local treatment. A diminution of hypertrophy at the two posterior extremities, I may add, I have repeatedly observed after the removal of adenoid vegetations and enlarged tonsils.

The principle involved in turbinotomy is the radical removal of that part of the tissue which is the final cause of obstruction, and in which hypertrophy is furthest ad-

vanced, leaving the less affected part, which is to perform the function of the body, uninjured by operative procedures. The indication is to remove as little tissue as possible consistent with the freeing of the passages from obstruction to respiration.

A comparison of results obtained by this method with those from the use of the cautery will, I believe, operate more and more to restrict extensive burning out of the nose in the days to come. If cauterization is sufficient to materially reduce the hypertrophy, the process must of necessity result in the wholesale destruction of the glands so essential to the function of these bodies, and the conversion of an already diseased tissue into a cicatricial one.

In forty-two of the cases referred to it was my fortune to inspect the patient at least one year after operating; in no instance was there a complaint of discomfort attributable to the operation, while I regret to say that in a number of cases in which the cautery was used inspection now shows in some instances, instead of the normally curved body at the site of operation, a flat, dry, resisting surface, giving rise at times to an annoying sense of dryness, while in others the process has not been arrested, but has continued to develop, either beneath the tissue cauterized or in immediately adjacent parts.

The number of cases reported in which troublesome adhesions, septic inflammation, and—the one case, at least, Dr. Quinlan's—in which meningitis resulted from cauterization of the middle turbinated body, should preclude the use of the galvanocautery in this region at least. The method above described has the great advantage over the use of scissors that the view is not obstructed by the instrument. This is particularly apparent in resection of the middle turbinated body, so frequently necessitated by disease of the ethmoidal sinuses, in which procedure the application of either scissors or saw may be extremely difficult.

**Medical News.* 1884.
†*Wiener medicinische Wochenschrift,* 1884, p. 1125.

Discussion.

Dr. CASSELBERRY: I feel that the present reaction against the galvanocautery which found expression in a recent discussion before the New York Academy of Medicine, and which the essayist voices to some degree, is unjust toward that remedy. I have no doubt galvanocauterization is greatly abused, and that it is often inadequately or too extensively applied, but, skilfully used in suitable cases, I still find it beneficial and harmless, and I should be at a loss often to substitute other means for it.

Dr. MAYER: Just a word or two in reference to this subject. In cases where there is much hypertrophic tissue to remove, I would call your attention to the linear incision that has been suggested, making the incision first along the floor up into the body of the inferior turbinate, then turning to the right with the knife and coming right down to the bone, making a bone scar.

Dr. BOYLAN: In excessive hypertrophy or partial hypertrophy?

Dr. MAYER: In cases where there is enough tissue to warrant a thorough operation.

Dr. BOYLAN: I should like to ask Dr. Casselberry whether he has seen septic symptoms in any of his cases from the use of the cautery in the region of the middle turbinated body.

Dr. CASSELBERRY: I have many times made a linear cauterization along the anterior inferior aspect of the middle turbinated body, and never seen sepsis resulting. But cauterization of this structure should be limited to the baggy hypertrophy which is often found at this spot.

Dr. BOYLAN: As regards the reduction of hypertrophy by linear incision referred to by Dr. Mayer, I would say that my paper advocates turbinotomy in the advanced and indurated or myxomatous forms which are so frequently permanently associated with interference of the respiratory functions. Soft, or partial, hypertrophy is best treated by other methods, and in such cases I find a linear incision most efficacious.

As regards the use of the galvanocautery in hypertrophy of the turbinated tissue, so warmly advocated by the last speaker, when judiciously used in proper cases, it is a very excellent method; I use it frequently myself, as, for example, in the reduction of partial hypertrophy by deep incision, the destruction of minute polypi and

myxomatous tissue, etc. But in the extensive and advanced hypertrophy referred to I cannot conceive of the burning away of a large surface of tissue as a scientific or even justifiable procedure, where we are able to remove by ablation the most diseased and offending part without injuring the remaining tissue.

Paper.

HÆMORRHAGE FROM A CIRCUMTONSILLAR ABSCESS.

By WALTER F. CHAPPELL, M. D.

Primary or secondary hæmorrhage from a tonsillar abscess occurs so rarely that the following case seems worthy of our attention:

T. O'B., aged twenty-seven years, a porter by occupation, had had two attacks of quinsy in the past two years, each resulting in an abscess, which had to be opened. The present attack began about December 1, 1899, with great pain on the right side of the throat, extending down the neck. The left side was also swollen and slightly painful. He remained under his family physician's care for five weeks, during which time four incisions were made, with little relief.

He came under my care at the Manhattan Eye, Ear, and Throat Hospital on January 15th, presenting the well-known appearance of patients with quinsy. An examination showed intense swelling of the tissues, internally and externally, and an abscess pointing in the middle of the posterior pillar of the soft palate. A small longitudinal incision was made at this point and about half an ounce of foul pus escaped.

He remained in the hospital, some pus continued to discharge from the opening, the swelling diminished, and his condition improved daily. Early on the morning of January 21st, four days after the abscess was incised, he complained of a sudden severe pain in the throat, followed in a few minutes by a hæmorrhage of about six ounces, which ceased on the application of tannic acid. Four hours later a second hæmorrhage occurred of about eight ounces, which was also stopped by an astringent gargle. An examination of the urine was made at this time, which showed the presence of albumin in large quantities, also epithelial and pus cells, and granular casts with pus corpuscles adherent. The local

condition of the throat again improved, without further bleeding until January 26th, when the third hæmorrhage occurred. This partially ceased after about eight ounces of blood had been lost, but more or less oozing continued during the morning. I saw the patient in the afternoon, and found the tonsillar and cervical tissues much distended and painful; some blood still oozed from the opening in the posterior pillar and the abscess cavity was filled with blood clots. A large incision was made through the anterior surface of the soft palate and carried backward until the abscess cavity was reached. After thorough washing out of the blood clots with hydrogen peroxide, the ascending pharyngeal artery was seen at the outer and back wall of the cavity. No ulcerations could be discovered in the walls of the artery, but, naturally, little effort was made in that direction. The cavity was packed with iodoform gauze and the patient returned to bed. The packing was changed daily for ten days, when the wound had healed and no further hæmorrhage occurred.

On the 28th of January a very interesting attack of rheumatism occurred, accompanied by severe pains in the muscles of the calves, and also the abdomen, and some slight joint symptoms. No cardiac implication could be discovered. I might also add that the kidney affection continues at the present time, and there seems to be no doubt that the tonsillar abscess was responsible for the nephritis, as well as the rheumatism.

An examination of the literature of this subject gives reports on ten cases, with two recoveries. The first case occurred in the practice of Dr. Samuel Walker, in 1825. The patient had a double tonsillar abscess. The left one opened spontaneously. On the right side a tumor pointed in front of the thyreoid cartilage, and, on being opened, it was found to communicate with a right tonsillar abscess. Two days later the patient died from a great hæmorrhage, the blood gushing from the mouth and nose.

The second case was reported by Dr. Thomas Watson in 1828. Two days after the tonsillar abscess was opened, twelve or fourteen ounces of blood suddenly gushed from the throat and nose, and the hæmorrhage recurred in the evening of the same day, and also on the following morning. The patient then improved for two

weeks, when, after he had eaten some meat, the bleeding returned, and while preparations were being made to tie the carotid he died suddenly from suffocation. An autopsy revealed the trachea and bronchi full of blood clots and a large erosion of the lingual artery.

The third case, reported by Dr. Luke in 1829, was a tonsillar abscess, which broke spontaneously and was followed at once by a discharge of about six ounces of blood. Three days later the patient bled again, and in two days had another recurrence, during which it was said he lost pints of blood. The following day he had a fourth attack, when the carotid was tied with success.

The fourth case was reported by Dr. Reeves. The quinsy had opened spontaneously, and hæmorrhage took place the same day, and recurred six or eight times before a physician was consulted. Ligature of the carotid was recommended and declined, the patient dying from several further hæmorrhages.

Dun's case was that of a child, three and a half years of age, suffering from a circumtonsillar abscess, which opened spontaneously. Twenty-four hours later bleeding began from the posterior pillar of the soft palate. Later a blood tumor appeared in the neck. The carotid was tied with success.

Norton's case was that of a child, four years of age, which terminated fatally. An autopsy showed ulceration of the internal carotid.

In Clayton's case, the tonsillar abscess opened spontaneously, and this was followed in some hours by a hæmorrhage which resulted fatally. The internal carotid was found severely ulcerated at the autopsy.

In Grisolle's case the abscess had opened spontaneously and resulted fatally from hæmorrhage. The internal carotid was implicated in a large ulcerating surface.

In Müller's case the abscess had opened spontaneously and several hæmorrhages had occurred, which eventually resulted fatally, and ulceration of the carotid was found at the autopsy.

Brewer's case was seemingly in a healthy man who

had an ordinary sore throat. He had several hæmorrhages, which seemed to come from the rupture of a small abscess on the posterior surface of the soft palate.

Remarks.—The spontaneous rupture of the tonsillar abscess in all these hæmorrhage cases is very suggestive, and one cannot but feel that an early incision would have prevented the extensive ulcerations which implicated one of the large vessels. There seems no reason for the great mortality which these reports have shown. Immediate ligation of the carotid, on the occurrence of the first hæmorrhage, should be practised, or, as proved successful in my case, a free incision through the anterior wall of the soft palate and firm packing of the abscess cavity with antiseptic gauze.

Discussion.

Dr. J. E. Logan, of Kansas City: I desire to say a few words in connection with this paper. I recall a case of double quinsy which once came under my care. The patient had never had rheumatism, and after he was relieved of quinsy I proceeded to operate upon him for deviation of the nasal sæptum, and I was struck very forcibly with the profuse hæmorrhage that occurred, and which came near resulting fatally. In a few days the patient was attacked with purpura hæmorrhagica after the quinsy had subsided, and small spots developed on the legs. In tamponing the nose it required the closest application and attention to prevent the patient from bleeding to death. After the operation upon the nose he was put under the care of a general practitioner, was relieved of his trouble, and is living to-day.

Dr. Mackenzie related a case of circumtonsillar abscess in which the bleeding point defied detection, but was finally located by means of a probe, which went into a pocket, evidently the interior of a wounded vein. After exhausting other methods of treatment, the vein was finally ligated and the hæmorrhage stopped.

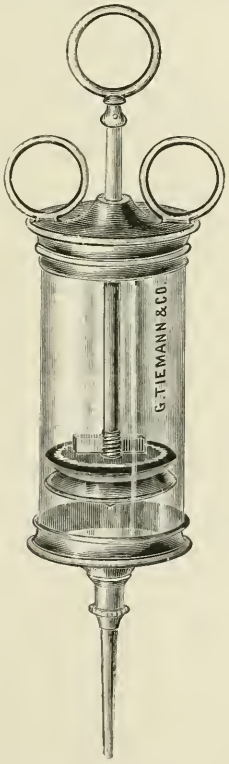
The case was one of interest and brings out one or two points, the first of which is, that in cases of hæmorrhage about the throat, such as I have described, always carefully explore with a probe to see whether there is any pocket in the circumtonsillar region which represents, perhaps, a wounded vein.

We may sometimes have an anomalous large vein in this region which, when wounded by the knife of the surgeon, may give rise, if not discovered, to a fatal hæmorrhage. If the source of the hæmorrhage is not found, the patient may go on and bleed indefinitely. The second point is that, if plugging of the vein and obstructing the current do not suffice to arrest the hæmorrhage, no time should be lost in cutting down and ligating the wounded vessel.

A NEW AURAL SYRINGE.

By J. H. BRYAN, M. D.

The syringe which I have the pleasure of showing you to-day is an extremely simple one, consisting of a



glass barrel with metal attachments. It is devoid of the many drawbacks which are common to the various in-

struments thus far placed on the market, in that it can be kept thoroughly aseptic, and it does not leak after boiling, a defect so frequently met with in the ordinary ear syringe.

The new composition fastening of the metal and glass is firm, and it can be boiled, as well as the composition packing of the piston.

The piston can be tightened or loosened by drawing the piston-rod clear up where the bracket on the packing plate locks between two brackets on the inside of the top cap. By turning the piston-rod to the left the packing is screwed together, which expands it, while by turning to the right the packing is loosened. It is desirable when the instrument is not in use to keep the packing loose.

NEW INSTRUMENTS AND SPECIMENS.

Under the head of "Presentation of Instruments and Specimens," Dr. J. H. Bryan exhibited a new aseptic syringe; also metal drainage tubes for use in treating obstinate cases of frontal sinus suppuration.

Dr. Emil Mayer showed a new introducer to be used in cases of stenosis of the larynx with a screw-piece attachment, this to take the place of the O'Dwyer instrument.

Dr. W. K. Simpson presented a modified intubation tube.

Dr. R. P. Lincoln, of New York, presented through the Secretary a wax model of a recurrent tonsillar tumor, with illustrated plates and paper, which was read by title.

Dr. J. E. Boylan showed a syringe for anesthetizing the tissues at the vault of the pharynx before operation.

BUSINESS MEETING.

The Twenty-second Annual Congress of the American Laryngological Association convened at the Arlington Hotel, Washington, D. C., May 1st, 1900. The Association was called to order at 10 a. m. by the President, Dr. Johnston. There were present during the sessions the following Fellows:

C. E. Bean, St. Paul, Minn.
H. S. Birkett, Montreal, Canada.
A. A. Bliss, Philadelphia, Pa.
J. E. Boylan, Cincinnati, Ohio.
J. H. Bryan, Washington, D. C.
W. E. Casselberry, Chicago, Ill.
W. F. Chappell, New York City.
J. Payson Clark, Boston, Mass.
F. C. Cobb, Boston, Mass.
J. Solis-Cohen, Philadelphia, Pa.
S. Solis-Cohen, Philadelphia, Pa.
W. H. Daly, Pittsburgh, Pa.
T. A. De Blois, Boston, Mass.
D. Bryson Delavan, New York City.
J. W. Farlow, Boston, Mass.
T. M. Hardie, Chicago, Ill.
J. H. Hartmann, Baltimore, Md.
F. E. Hopkins, Springfield, Mass.
Samuel Johnston, Baltimore, Md.
D. Braden Kyle, Philadelphia, Pa.
S. W. Langmaid, Boston, Mass.
J. E. Logan, Kansas City, Mo.
J. H. Lowman, Cleveland, Ohio.
J. N. Mackenzie, Baltimore, Md.
G. Hudson Makuen, Philadelphia, Pa.
Emil Mayer, New York City.
T. Morris Murray, Washington, D. C.
J. E. Newcomb, New York City.
W. P. Porcher, Charleston, S. C.
C. C. Rice, New York City.
A. W. De Roaldes, New Orleans, La.
Beverly Robinson, New York City.
J. O. Roe, Rochester, N. Y.
W. K. Simpson, New York.
H. L. Swain, New Haven, Conn.
A. B. Thrasher, Cincinnati, Ohio.
A. W. Watson, Philadelphia, Pa.
Jonathan Wright, Brooklyn, N. Y.

Formal proceedings were opened by the roll-call, followed by the address of the President. After listening to the papers of the morning it was voted that the paper of Dr. French, an abstract of which had been presented in the author's absence, be printed in the Transactions, and that he be requested to bring the subject up again next year.

Carried.

The Association then went into executive session.

The President appointed as a Committee to audit the Treasurer's accounts Drs. Makuen and Simpson.

The election of a Nominating Committee resulted in the choice of the following gentlemen: Drs. J. H. Bryan, J. E. Logan, T. M. Murray, W. E. Casselberry and S. W. Langmaid.

At the business meeting of the second day the following reports were read and approved:

Secretary's Report.

It would give me pleasure to be able to present to you, in accordance with our custom, the last volume of Transactions. It has been delayed mainly by waiting for the Thesis of Dr. Thorner, and incidentally at the last, when all was ready for binding by the business infelicities which befell the publisher.

Since we last met, we have lost from our circle by death two Active Fellows, Dr. J. C. Mulhall and Dr. Max Thorner, and two Corresponding Fellows, Dr. Carl Stoerck and Dr. W. McNeil Whistler. Dr. William H. Park has resigned. This leaves our active membership numbering seventy.

Two meetings of the Council were held during the year, and the minutes of these will now be read.

Treasurer's Report, 1899-1900.

Receipts.

Balance from 1899 account . . .	$336.54	
Dinner, Chicago	140.00	
Dues, 1898	10.00	
Dues, 1899	45.00	
Dues, 1900	285.00	
Transactions, 1879-1898, sales . .	44.40	
Transactions, 1898	32.50	
		$893.44

Disbursements.

Dinner, Chicago	$140.00	
Stenographer, Chicago	80.00	
Printing Slips for 1899 program	3.85	
D. Appleton & Co., Transactions	321.28	
Printing, Stationery, Cards, Circulars and Programs	56.75	
Postage on Programs	5.00	
		$606.88
Balance to credit	$286.56	

(Signed) G. Hudson Makuen,
W. K. Simpson,
Auditing Committee.

Librarian's Report.

The Librarian has to report that during the past year 92 pamphlets and 3 bound books have been added to the Library and deposited in the Surgeon-General's library at Washington.

Respectfully submitted,
J. H. Bryan, *Librarian.*

The Secretary read a letter from Dr. Geo. M. Gould on behalf of the Association of Medical Librarians, asking the donation to the constituent libraries of volumes of our own Transactions. The Secretary described the method of distributing the volumes as at present carried on. The matter was discussed by various members, and it was voted that the whole question be left to the discretion of the Secretary.

The matter of the future publications of the Transactions was brought up, and after a full and free discussion, the matter was referred back to the Council with power.

A letter was read from Dr. Felix Semon, Corresponding Fellow, of London, in which he questioned the desirability of combining Laryngology and Otology in one section in future international medical congresses, and on similar occasions.

It was unanimously voted "that it is the sense of this Association that at future international congresses and on similar occasions the departments of Laryngology and Otology shall be separately organized"; and that the Secretary of this Association be and hereby is instructed to notify Dr. Semon of the action taken.

Dr. Jonathan Wright spoke of the present method of selecting members of the Association and of certain objections thereto. He gave notice that at the next Congress of the Association he would submit an amendment to the Constitution covering this point. The matter was discussed by various Fellows.

Dr. Bryan, Chairman of the Nominating Committee, presented the following report on Nominations of Officers for the coming year:

President.—Dr. Henry L. Swain, New Haven, Conn.

First Vice-President.—Dr. H. L. Wagner, San Francisco.

Second Vice-President.—Dr. A. A. Bliss, Philadelphia, Pa.

Secretary-Treasurer.—Dr. James E. Newcomb, New York.

Librarian.—Dr. J. H. Bryan, Washington.

For Member of the Council.—Dr. Samuel Johnston, Baltimore.

Place of Meeting.—New Haven. Date to be fixed by the Council.

Adjourned.

At the close of the executive session a case of disease of the tongue was presented by Dr. Chappell.

At the business session of the third day the Secretary read a letter from a committee of the International Medical Congress asking that the Association contribute $25.00 towards defraying the expenses of the next Congress.

On motion, the sum of $25.00 was ordered to be paid to the Congress by the Treasurer of this Association.

The report of the Nominating Committee was reread, and on motion, the Secretary was instructed to cast the ballot of the Association for the officers whose names had been presented, which he did, and they were declared duly elected.

The Chair appointed Drs. Delavan and Hopkins to escort the newly-elected President to the Chair.

On motion a vote of thanks was extended to the retiring Secretary for his efficient services.

The retiring President then presented Dr. Swain as President of the Association for the ensuing year.

Dr. Swain thanked the Association for the distinguished honor conferred upon him in electing him

President, and also spoke of his great appreciation of the vote of thanks extended to him as Secretary.

Moved that a vote of thanks be tendered to the retiring President for the able and impartial manner in which he had presided over the deliberations of the Association. Carried.

Moved that the Secretary furnish the proper credentials to those Fellows who desire to attend the meeting of the International Medical Congress of 1900, and that the Secretary communicate with different members with a view to finding out the number who are going, so that the proper credentials can be furnished. Carried.

There being no further business to come before the meeting, on motion, the Association adjourned.

HENRY L. SWAIN, *Secretary.*

OBITUARY.

RUFUS PRATT LINCOLN.

Dr. Rufus Pratt Lincoln was born April 27th, 1841, at Belchertown, in the central part of Massachusetts. He prepared for college at Williston Seminary and at Phillips Exeter Academy, and was graduated from Amherst College in the class of 1862. He was generally regarded among the alumni of Amherst as the most distinguished member of the medical profession who ever took a degree from that institution.

From the records of the Military Order of the Loyal Legion of the United States we find that immediately after his graduation he entered the service and was commissioned second lieutenant in the 37th Regiment of Massachusetts Volunteers, August 27th, 1862; captain, October 15th, 1862; major, July 27th, 1864; lieutenant colonel, March 4th, 1865. He was brevetted as lieutenant colonel on October 19th, 1864, for "distinguished gallantry during the present campaign before Richmond, and for meritorious services at the battle of Cedar Creek, Virginia"; and as colonel on April 6th, 1865, for "gallant and meritorious services before Petersburg, and at the battle of Little Sailors Creek, Virginia"; and on June 19th, 1865, he was transferred as lieutenant colonel to the 20th Massachusetts Volunteers, then expected to be ordered to Mexico for duty against Maximilian. He served as assistant inspector general of the 1st Division 6th Army Corps on the staff of General David A. Russell and General Frank Wheaton from August, 1864, to the end of the war. He participated in the following battles and campaigns:

Fredericksburg, December 10th-15th, 1862.
Mud Campaign, January 20th-23d, 1863.
Salem Heights, May 3d and 4th, 1863.
Gettysburg, July 2d and 3d, 1863.
Funkstown, July 10th, 1863.
Rappahannock Station, November 7th, 1863.
Mine Run, November 29th and 30th and December 1st, 1863.

The Wilderness, May 5th-7th, 1864.
Spottsylvania, May 8th-12th, 1864.
Opequan, September 19th, 1864.
Fishers Hill, October 22d, 1864.
Cedar Creek, October 19th, 1864.
Hatcher's Run, February 6th, 1865.
Dabney's Mills, February 7, 1865.
Forts Steadman and Wadsworth, March 25th, 1865.
Assault on Petersburg, April 2d; Sailors Creek, April 6th, 1865.

He was slightly wounded in the groin on May 6th, 1864, in the battle of the Wilderness, and severely wounded in the left side on May 12th, 1864, at "the Angle." He was mustered out of the 20th Massachusetts Regiment on July 15th, 1865.

The wound he received at Spottsylvania was one of the most dangerous on record. It consisted in a rifle shot completely through the left chest and lung, just escaping the heart. Colonel Lincoln's constitution withstood this extraordinary shock and he finally convalesced, returning to his regiment and remaining with it until the close of the war. From the effects of the wound just mentioned he never fully recovered, and in the midst of the busiest and most trying periods of his professional career often suffered acutely, as those accustomed only to his genial countenance and cheerful manner never dreamed.

This brief summary of his military career gives but a faint idea of the enthusiasm, energy, courage and rare sagacity of the man. But if all were told of Colonel Lincoln's experience during the War of the Rebellion, rising as he did from the ranks by sheer and absolute superiority, splendidly filling every post to which he was assigned, always challenging the admiration and respect of his superiors, until his further advance was checked by the advent of peace, the record of his career would fill many an interesting page of history.

It is most creditable that after such a life of adventure and excitement he should at the close of the war have entered upon the study of medicine. He first matriculated at the College of Physicians and Surgeons, New York, but a year later went to Boston and entered the Harvard Medical School, graduating from it with exceptional credit in 1868.

His term of service as interne was spent at the Massachusetts General Hospital. Immediately after leaving the hospital, Dr. Lincoln married Caroline, daughter of the late Wellington H. Tyler, of Pittsfield, Mass. One

child survives him, a daughter. The only son, Rufus Tyler Lincoln, a remarkably bright and promising youth, died about ten years ago at the age of sixteen, of the same disease which finally accomplished his father's end.

Any man of less bravery or faith than Dr. Lincoln would have been discouraged, if not crushed, by such a blow as the sudden loss of this boy, but to it, as to all the accidents of his life, he rose superior, continuing his work with that unselfish devotion to the interests of others which was the keynote of his character.

Dr. Lincoln chose as the field of his professional career the City of New York, where, introduced by Willard Parker and inspired by the character and work of Horace Green, he at once began to devote himself to the study of the diseases of the upper air passages, then (1869) in its infancy. His advancement was rapid and certain and he was not long in acquiring a practice which exceeded in extent and importance anything then or at present known among us. This he maintained for more than twenty-five years of uninterrupted work and of unexampled prosperity.

Meanwhile he was an active participant in medical affairs, for, among other similar honors, he was appointed by the New York Academy of Medicine, and by this Association delegate to several of the international congresses, and was elected president of the American Laryngological Association in 1888, of the Harvard Medical Society of New York in 1891, and others. He was one of the early members of the New York Laryngological Society, the first special society of its kind in the world (1873), and when the latter was made the section in laryngology of the New York Academy of Medicine, Dr. Lincoln was elected its first chairman. It is fair to say that the splendid and constantly increasing success and importance of this scientific body has been due in no small degree to his influence.

Undoubtedly one of the most interesting events of its kind that has ever taken place here was a meeting of the New York Laryngological Society, held at the residence of Dr. Lincoln in honor of Dr. Morell Mackenzie during the latter's visit to this country in 1882. The most distinguished specialists of the United States were present, many coming from great distances. The scientific feature of the evening was a masterly paper by Dr. Mackenzie on "Tonsillotomy." This was followed by a fine discussion, and the occasion was ended with a large reception and banquet.

Dr. Lincoln was a member of the following societies: The Loyal Legion, the Massachusetts Medical Society, the New York County Medical Society, the New York Academy of Medicine, the New York Pathological Society, the New York Neurological Society, the American Medical Association, the American Academy of Medicine, the American Laryngological Association, the American Climatological Association, the Harvard Medical Alumni Asociation and the Harvard Medical Society of New York.

He published many pamphlets on medical subjects, and his writings were always characterized by originality, wisdom and force.

Dr. Lincoln was possessed to a remarkable degree of the characteristics of a pure scientist. His mental processes were characterized by keen and tireless observation, wonderfully well balanced and logical judgment, unwearying patience and the absence of that over-sanguine disposition which unduly bends the train of argument toward a desired conclusion.

As a therapeutist he was one of the most resourceful and learned of any that our specialty has produced.

The subject of treatment by inhalation having come up during the early part of his career was carefully studied, its fallacies eliminated and its strong practical points recognized and practiced by him long before they were taken up by any other influential man. As an authority upon the subject of climatology he had no superior. His skill in physical diagnosis was well known and his opinions worthy of respect when compared with those of the highest authorities. His resources for the practical management of pulmonary diseases were far beyond those in common use, and his methods often much in advance of the time. It is in the field of surgery, however, that we find what seems to be the most brilliant chapter of his career. His keenness of eyesight, steadiness of hand, patience, courage and extraordinary manual dexterity enabled him to attain surprising success, often where others had failed. His precision in applying an instrument to parts difficult of access was unequalled, here or abroad. Not only a high authority in the surgical diseases of the larynx and of the nasal cavity proper, he early recognized the importance of the diseases of the sinuses and was one of the first in this country to understand and to successfully treat them.

In the application of electricity to the diseases of the upper air passages Dr. Lincoln was a pioneer, as shown

by the published records of his investigations, inventions and actual work. The most striking record of his life is that connected with the surgical treatment of naso-pharyngeal tumors of a semi-malignant type, the fibromata, sarcomata, fibro-sarcomata and angeio-fibro-sarcomata. The two great dangers hitherto experienced in the removal of these growths, namely, the necessity for extensive preliminary operations and the inevitable bleeding which followed the removal of the growths themselves, were sufficient in an alarming proportion of cases to cause the speedy death of the patient. To Dr. Lincoln we owe the introduction into this country of the method of operating, in suitable cases, through the natural passages with the galvano-caustic loop, thus avoiding the mutilation and shock of the preliminary operation, and almost entirely preventing the dangerous element of hemorrhage. Many such cases were operated upon by him. Every patient survived the operation, with little or no shock, the amount of blood lost in most instances was infinitesimal, and there was not a single incident in the recovery of these patients which caused unusual anxiety. The details of the procedure are well known. Strange to say, its results are not fully appreciated, even to-day, by the surgical profession, many prominent members of which have failed to grasp the real value of this brilliant advance.

The military honor and scientific distinction which he attained were of insignificant value when compared with the grace and beauty of the life of this true-hearted physician. Few men have lived to whom a larger number have attached themselves in bonds of stronger friendship. While Dr. Lincoln dealt with an extraordinary number of the prominent men and women of the country, his time and skill were not reserved for these alone. Although he never devoted himself to public work, numerous deserving sufferers received good at his hand, a hand so generous that the story of its beneficence would cause surprise, bestowing itself with that reticence which to those who knew the man but slightly was his chief trait, so delicately giving that scarcely the recipient himself knew what favors were being heaped upon him.

Dr. Lincoln's executive capacity exceeded that of any man of his time. Beginning early in the morning, he worked incessantly, often until late at night, giving every case full and proper attention, seizing the salient points of each with marvelous rapidity, as well as with unerring penetration, remembering the points of each,

either through notes or by that remarkable mentality which enabled him to carry the wonderful detail of his routine without error, and dismissing patient after patient with an accuracy of diagnosis, a completeness of treatment and a fullness of advice quite beyond what is customary even with the most painstaking specialist. He spared no labor in the study and care of the cases which presented themselves to him, often working until late at night in his library or at the bedside.

He belonged to no institution, attended no clinic, held no public teaching position, yet his constantly filled consulting rooms, and the conscientious skill which he invariably exercised were to him the opportunity and the discipline which justly placed him in the first position among the men of his time. Too much public work in a specialty demanding the utmost refinement has often proved disastrous.

By birth, education and personality, Dr. Lincoln represented the highest type of the refined and cultivated gentleman. He was a man of fine physical appearance and great elegance of manner, as well as brilliancy of mind, whose rare qualities of character and disposition were recognized by the ablest and the best. Entering as he did upon the study of medicine, he was neither fresh from the provinces nor a recent graduate from school. He had already thrown himself into the very heart of the life and action of a stirring epoch. His military life doubtless did much to widen his sphere and develop the man in him, as it enabled him to form associations with great varieties of men entirely outside of the profession into which he subsequently entered, and unmistakably marked its influence upon his professional career.

Taken altogether, his acquaintance with the world at large, his broad, general knowledge of medicine, his undoubted pre-eminence in his own specialty and the rare personal qualities of heart, mind and disposition which distinguished him, these things constituted him one of the greatest physicians and most useful leaders of his time, one who, if titles are in question, should justly be awarded those of SOLDIER, SCIENTIST, PHILANTHROPIST.

D. B. D.

ACTIVE FELLOWS.

ELECTED.

1878. Asch, Morris J., 5 West 30th St., New York.
1880. Bean, C. E., Germania Life Bldg., St. Paul, Minn.
1893. Birkett, Herbert S., 123 Stanley St.,Montreal.
1893. Bliss, Arthur Ames, 117 South 20th St., Philadelphia, Pa.
1878. Bosworth, Francke H., 41 Park Ave., N. Y.
1895. *Boylan, J. E., 319 Broadway, Cincinnati, O.
1892. Brown, M. R., 34 Washington St., Chicago, Ill.
1891. Bryan, J. H., 818 17th St., Washington, D. C.
1889. Casselberry, William E., 34 Washington St., Chicago, Ill.
1882. Chapman, S. H., 193 Church St., New Haven, Conn.
1896. Chappell, W. F., 7 East 55th St., New York.
1897. Clark, J. Payson, 409 Marlborough St., Boston, Mass.
1899. Cobb, Frederic C., 11 Marlborough St., Boston, Mass.
1878. Cohen, J. Solis-, 1824 Chestnut St., Phila., Pa.
1884. Cohen, S. Solis-, 1525 Walnut St., Phila., Pa.
1893. Coolidge, A., Jr., 613 Beacon St., Boston, Mass.
1880. Daly, Wm. H., 6211 Howe St., Pittsburgh, Pa.
1882. De Blois, Thomas Amory, 48 Gloucester St., Boston, Mass.
1881. Delavan, D. Bryson, 1 East 33d St., N. Y.
1892. Farlow, J.W., 234 Clarendon St., Boston,Mass.
1879. French, Thomas R., 150 Joralemon St., Brooklyn, N. Y.
1897. Frothingham, Richard, 60 W. 55th St., N. Y.
1878. Glasgow, Wm. C., 2847 Washington Ave., St. Louis, Mo.
1880. Gleitsmann, J. W., 46 East 25th St., N. Y.
1898. Goodale, J. L., 3 Fairfield St., Boston, Mass.

* Resigned.

1896. Hardie, T. Melville, 34 Washington St, Chicago, Ill.
1878. Hartman, J. H., 5 West Franklin St., Baltimore, Md.
1888. Hinkel, F. Whitehill, 412 Franklin St., Buffalo, N. Y.
1881. Hitchcock, Urban G., 51 West 29th St., N. Y.
1893. Hope, George B., 133 West 72d St., N. Y.
1895. Hopkins, F. E., Springfield, Mass.
1895. Hubbard, Thos., 205 Ontario St., Toledo, O.
1878. Ingals, E. Fletcher, 36 Washington St., Chicago, Ill.
1882. Ives, Frank L., 117 East 30th St., N. Y.
1878. Johnston, Samuel, 204 West Monument St., Baltimore, Md.
1885. Knight, Charles H., 147 West 57th St., N. Y.
1878. Knight, Frederick I., 195 Beacon St., Boston, Mass.
1898. Kyle, D. Braden, 1517 Walnut St., Phila., Pa.
1880. Langmaid, Samuel W., 373 Boylston St., Boston, Mass.
1878. Lefferts, George Morewood, 212 Madison Ave., N. Y.
1894. Leland, George A., 669 Boylston St., Boston, Mass.
1897. Logan, James E., 1208 Wyandotte St., Kansas City, Mo.
1888. Lowman, John H., 441 Prospect St., Cleveland, O.
1886. MacCoy, Alexander, W., 1338 Walnut St., Phila., Pa.
1883. Mackenzie, John N., 605 Washington Place, Baltimore, Md
1898. Makuen, G. Hudson, 1419 Walnut St., Philadelphia, Pa.
1896. Mayer, Emil, 25 East 77th St., N. Y.
1899. McKernon, J. F., 62 West 52d St., N. Y.
1892. Murray, T. Morris, 17th and H Sts., Washington, D. C.
1893. Newcomb, James E., 118 West 69th St., N. Y.
1892. Porcher, W. Peyre, 99 Meeting St., Charleston, S. C.
1878. Porter, William, 3886 Washington Av., St. Louis, Mo.
1882. Rankin, D. N., 618 Sherman Ave., Allegheny, Pa.
1897. Rhodes, J. Edwin, 36 Washington St., Chicago, Ill.

1884. Rice, Clarence C., 123 East 19th St., N. Y.
1893. Roaldes, A. W. de, 624 Gravier St., New Orleans, La.
1878. Robinson, Beverley, 42 West 37th St., N. Y.
1879. Roe, John O., 28 North Clinton St., Rochester, N. Y.
1879. Seiler, Carl, Scranton, Pa.
1878. Shurly, E. L., 32 Adams Ave., W., Detroit, Mich.
1892. Simpson, W. K., 952 Lexington Av., N. Y.
1889. Swain, H. L., 232 York St., New Haven, Conn.
1892. Thrasher, A. B., The Groton, 7th and Race Sts., Cincinnati, O.
1888. Van der Poel, S. Oakley, 47 E. 25th St., N. Y.
1892. Wagner, Henry L., 522 Sutter St., San Francisco, Cal.
1892. Watson, A. W., 126 South 18th St., Phila., Pa.
1896. Ward, M. R., 303 Collins Av., Pittsburgh, Pa.
1896. Woollen, G. V., 20 West Ohio St., Indianapolis, Ind.
1890. Wright, Jonathan, 73 Remsen St., Brooklyn, N. Y.

HONORARY FELLOW.

1880. Garcia, Manuel, 1 Bentinck St., Manchester Square, London, England.

CORRESPONDING FELLOWS.

1892. Browne, Lennox, 15 Mansfield St., Portland Place, W., London, England.
1880. Bruns, Paul, Tübingen, Würtemberg, Germany.
1896. Chiari, Ottokar, Ballariastrasse 12, Vienna, Austria.
1890. De La Sota y Lastra, R., 7 Calle de Torqueros, Seville, Spain.
1893. Desvernine, C. M., Cuba 52, Havana, Cuba.
1887. Gouguenheim, A., 73 Boul. Hausmann, Paris, France.
1894. Holden, E., 13 Central Ave., Newark, N. J.
1892. Krause, H., Neustädt. Kirch-Strasse 13, Berlin, Germany.
1881. Labus, Carlo, Via St. Andrea 8, Milan, Italy.

1897. Luc, H., 54 Rue de Varenne, Paris, France.
1896. Macdonald, Greville, 85 Harley St., London, W., England.
1894. Macintyre, John, 179 Bath St., Glasgow, Scotland.
1892. Massei, F., 4 Piazza Municipio, Naples, Italy.
1887. Moure, E. J., 25 Cour du Jardin-Public, Bordeaux, France.
1896. Mygind, Holger, 60 Kjobmagergade, Copenhagen, Denmark.
1894. Sajous, C. E., 2043 Walnut St., Phila., Pa.
1896. Schmiegelow, Ernst, 18 Nörregade, Copenhagen, Denmark.
1881. Schroetter, Leopold v., Schwartzenberg-Strasse 8, Vienna, Austria.
1881. Semon, Felix, 39 Wimpole St., Cavendish Square, London, England.
1894. Wolfenden, R. Norris, Rougemont, Seaford, Sussex, England.

PAST MEMBERS.

Honorary Fellow.

*1881. Sir Morell Mackenzie, London, England.

Corresponding Fellows.

*1880. Wilhelm Meyer, Copenhagen, Denmark.
*1881. Pugin Thorton, London, England.
*1881. R. Voltolini, Breslau, Germany.
*1880. W. McNeil Whistler, London, England.

Active Fellows.

*1880. Harrison Allen, Philadelphia, Pa.
1895. J. E. Boylan, Cincinnati, Ohio.
*1883. C. W. Chamberlain, Hartford, Conn.
1880. E. W. Cushing, Boston, Mass.
1878. Ephraim Cutter, Boston, Mass.
*1878. F. H. Davis, Chicago, Ill.
*1878. Frank Donaldson, Baltimore, Md.
1886. Frank Donaldson, Jr., Baltimore, Md.
*1879. J. H. Douglas, New York.
*1879. W. F. Duncan, New York.
*1878. Louis Elsberg, New York.
†1879. Edgar Holden, Newark, N. J.
*1882. Franklin H. Hooper, Boston, Mass.
*1878. Hosmer A. Johnson, Chicago, Ill.
*1879. Woolsey Johnston, New York.
*1880. William C. Jarvis, New York, N. Y.
1879. R. H. Kealhofer, St. Louis, Mo.
*1878. Rufus P. Lincoln, New York, N. Y.
1881. G. W. Major, Montreal, Canada.
1879. Charles McBurney, New York, N. Y.
1885. H. Clinton McSherry, Baltimore, Md.
*1881. E. C. Morgan, Washington, D. C.
*1886. J. C. Mulhall, St. Louis, Mo.
1881. H. Mynter, Buffalo, N. Y.
*1895. J. E. H. Nichols, New York.
1879. H. K. C. Oliver, Boston, Mass.
1894. William H. Park, New York, N. Y.
1881. J. M. Robertson, Detroit, Mich.
1878. T. F. Rumbold, St. Louis, Mo.
†1880. Charles E. Sajous, Paris, France.
*1893. Charles M. Shields, Richmond, Va.
1879. Andrew H. Smith, New York.
1879. Bernhardt Tauber, Cincinnati, Ohio.
*1899. Max Thorner, Cincinnati, Ohio.
1878. Clinton Wagner, New York, N. Y.
1879. G. Whitefield Ward, New York, N. Y.
*1886. Benjamin F. Westbrook, Brooklyn, N. Y.

*Deceased. †Corresponding Fellow.

PAST OFFICERS.

Presidents.

1879. Louis Elsberg.
1880. J. Solis-Cohen.
1881. F. I. Knight.
1882. G. M. Lefferts.
1883. F. H. Bosworth.
1884. E. L. Shurly.
1885. Harrison Allen.
1886. E. Fletcher Ingals.
1887. R. P. Lincoln.
1888. E. C. Morgan.
1889. J. N. Mackenzie
1890. W. C. Glasgow.
1891. S. W. Langmaid.
1892. M. J. Asch.
1893. D. B. Delavan.
1894. John O. Roe.
1895. W. H. Daly.
1896. C. H. Knight.
1897. T. R. French.
1898. W. E. Casselberry.
1899. Samuel Johnston.

Vice-Presidents.

1879. F. H. Davis.
1880. W. C. Glasgow, J. O. Roe.
1881. E. L. Shurly, W. Porter.
1882. C. Seiler, E. F. Ingals.
1883. S. W. Langmaid, S. Johnston.
1884. J. H. Hartman, W. H. Daly.
1885. H. A. Johnson, G. W. Major.
1886. E. C. Morgan, J. N. Mackenzie.
1887. J. N. Mackenzie, S. W. Langmaid.
1888. W. C. Glasgow, C. E. Sajous.
1889. E. Holden, C. E. Bean.
1890. J. O. Roe, J. H. Hartman.
1891. M. J. Asch, S. Johnston.
1892. S. Johnston, J. C. Mulhall.
1893. J. C. Mulhall, W. E. Casselberry.
1894. C. C. Rice, S. H. Chapman.
1895. J. Wright, A. W. de Roaldes.
1896. T. M. Murray, D. N. Rankin.
1897. A. W. MacCoy, H. S. Birkett.
1898. J. W. Farlow, F. W. Hinkel.
1899. T. A. De Blois, M. R. Brown.

Secretaries and Treasurers.

1879. G. M. Lefferts.
1882. D. B. Delavan.
1889. C. H. Knight.
1895. H. L. Swain.
1900. J. E. Newcomb

Librarians.

1879. F. H. Bosworth
1883. T. R. French.
1893. J. H. Bryan.